

Service Manual

General Description

Adjustment Procedures

Block / Schematic Diagrams

Exploded Views / Parts List

Panasonic **S VHS** VHS
PAL
625

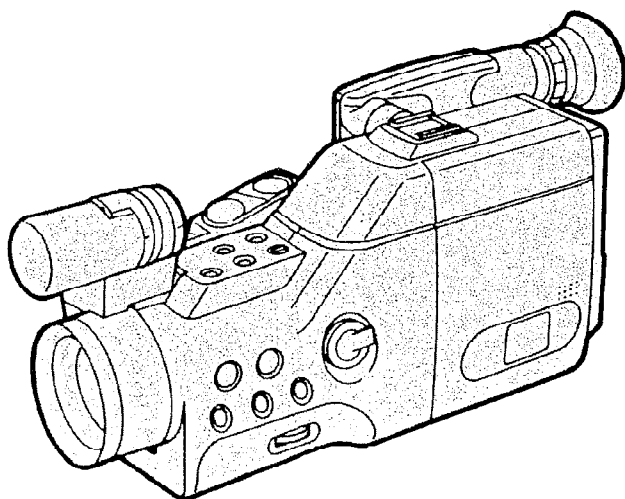
Hi-Fi HQ

S-VHS-C Movie

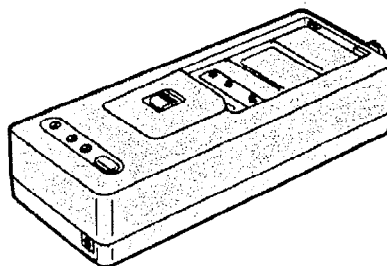
NV-MS70E/B/A
NV-M810EN

AC Adaptor

VW-AS1E/B/A



NV-MS70
NV-M810



VW-AS1

Panasonic

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INTRODUCTION

This service manual contains technical information which will allow service personnels to understand and service this model.

Section 1 presents you with some general information of features and controls, enabling you to become familiar with each function.

Section 2 contributes to your mechanical and electrical adjustment as well disassembly and replacement procedures.

In the case of very common information relating to other models like mechanical adjustments, please refer to each service manual.

Section 3 contains block diagrams which offers you information for checking and understanding each circuit. Schematic diagrams which give you detailed information such as waveforms, voltage data, function e.t.c. ...

Section 4 contains exploded views and parts list.

Please place orders using the parts list and not the drawing reference numbers.

If the circuit is changed or modified, this information will be followed by supplementary service manual to be filed with original service manual.

Technical Information

Service caution

1. Adjustment the Camera Section

In the camera section, EEPROM (Electric Programmable Read Only Memory) is adopted as adjustment element instead of conventional variable resistor.

EEPROM memorize the adjustment value as digital data and data to D/A (Digital to Analogue) converter to be changed DC voltage which is supplied to adjustment point as shown in Fig.T1

Thus, when adjusting the Camera process, it is necessary to change the adjustment data which is stored in EEPROM. For this purpose, EVR (Electric Variable Resistor) Fixture enables to communicate with EEPROM, D/A converter directly and can change its stored adjustment data.

The EVR Fixture is connect with camera as shown below and is used. (For more details, Please refer to Camera adjustment section).

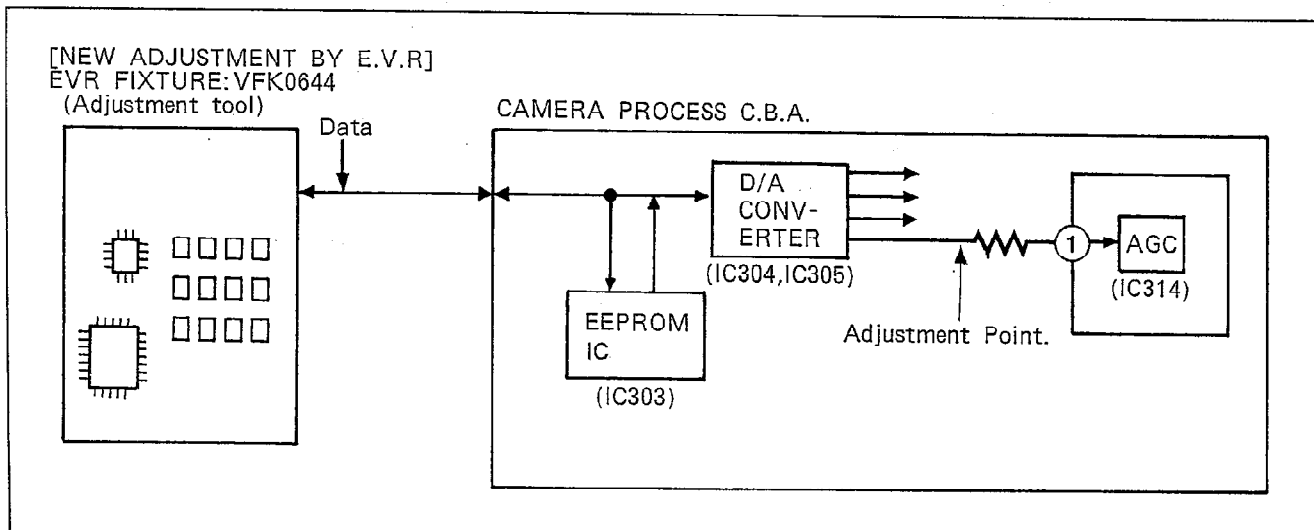


Fig.T1

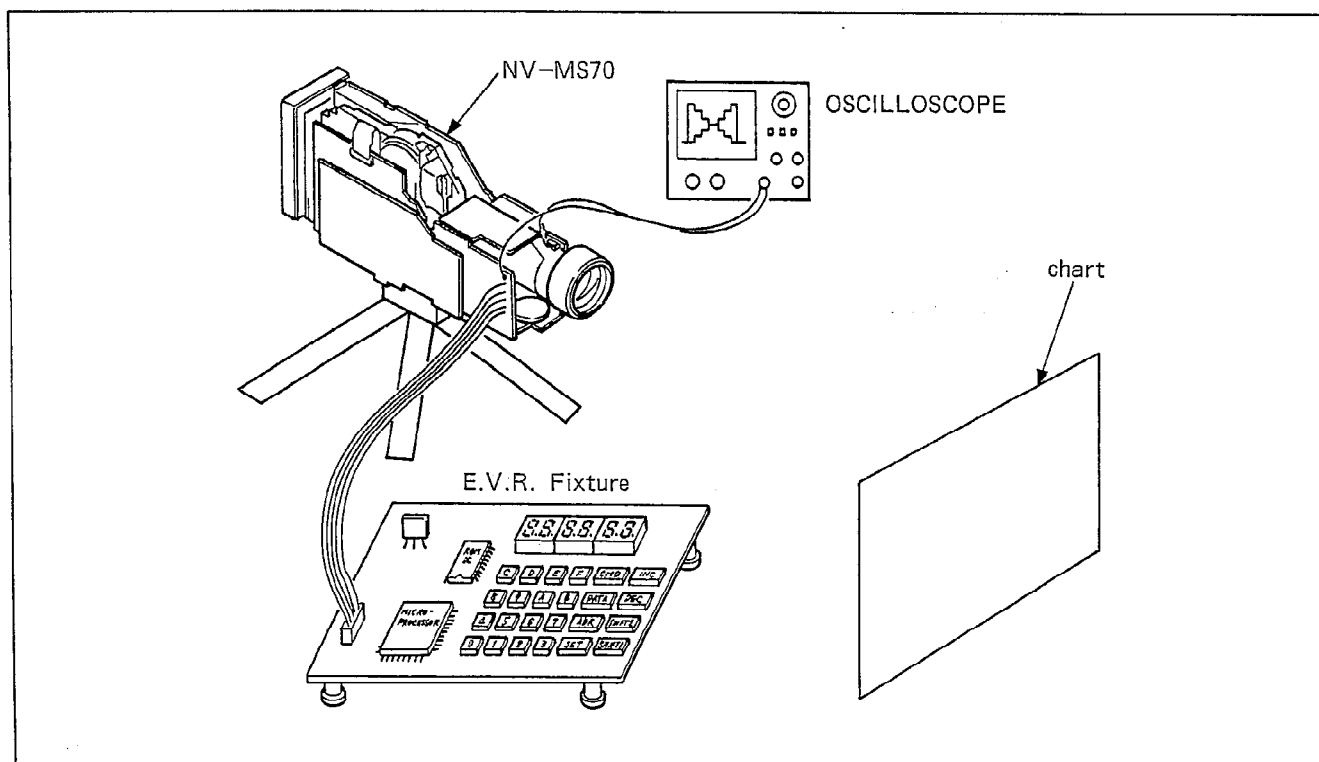


Fig.T2

2 Service Extension Cables

Use following Extension cable when checking or adjusting the individual circuit board assembly (C.B.A.) of video part or camera part.

NO.	PART NO.	Q'TY	PART NAME	CONNECTION
1	VFK0635	1 pc	18 PIN FLAT CABLE	CHASSIS TO P6004 (MAIN C.B.A.)
2	VFK0634	1 pc	9 PIN FLAT CABLE	A/C HEAD TO P4002 (MAIN C.B.A.)
3	VFK0620	1 pc	30 PIN EXTENSION CABLE	P5001 (MAIN C.B.A.) TO P3001 (Y/C PACK C.B.A.)
4	VFK0621	1 pc	22 PIN EXTENSION CABLE	P5002 (MAIN C.B.A.) TO P3002 (Y/C PACK C.B.A.)
5	VFK0622	2 pcs	16 PIN EXTENSION CABLE	P3003 (MAIN C.B.A.) TO B304 (PROCESS C.B.A.)
6	VFK0622	—	16 PIN EXTENSION CABLE	P3004 (Y/C PACK C.B.A.) TO B305 (PROCESS C.B.A.)
7	VFK0623	1 pc	20 PIN EXTENSION CABLE	P6201 (OPERATION C.B.A.) TO P6001 (MAIN C.B.A.)
8	VFK0627	1 pc	5 PIN EXTENSION CABLE	P1005 (POWER C.B.A.) TO POWER DC CONNECTOR
9	VFK0628	1 pc	4 PIN EXTENSION CABLE	P6006 (MAIN C.B.A.) TO ZOOM CONNECTOR
10	VFK0624	1 pc	24 PIN EXTENSION CABLE	B201 (SENSOR C.B.A.) TO B303 (PROCESS C.B.A.)
11	VFK0625	1 pc	16 PIN EXTENSION CABLE	B301 (PROCESS C.B.A.) TO B702 (AF C.B.A.)
12	VFK0626	1 pc	14 PIN EXTENSION CABLE	B302 (PROCESS C.B.A.) TO B701 (AF C.B.A.)
13	VFK0633	1 pc	5 PIN EXTENSION CABLE	P6003 (MAIN C.B.A.) TO E.V.F

Fig.T3

[How to Use Extension Cables]

- (1) Connection between Y/C pack C.B.A. Take out cabinet and connect cables as shown below. (Regarding voltage supply, connect VFK0627 (5PIN EXTENSION CABLE) to P1005.

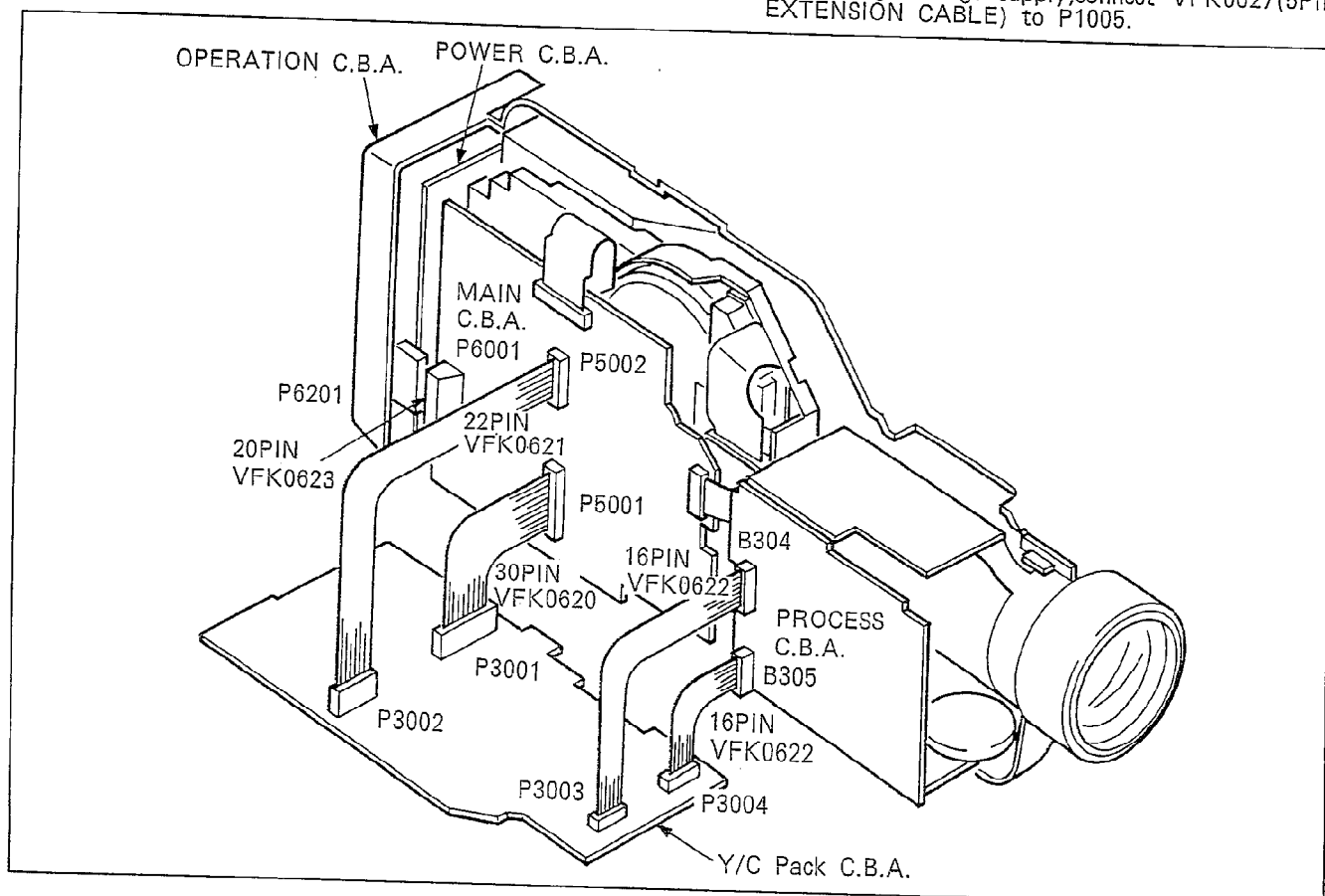


Fig.T4

4. How To Replace Capacitor. (New)

- 1) Heat the one side of capacitor with solder iron, and push its one side up by finger.
- 2) Remove one side of leg. side of capacitor and remove it.
- 3) Heat the opposite side of capacitor, put the capacitor and solder it as conventional.
- 4) When replacing new capacitor, put the capacitor and solder it as conventional.

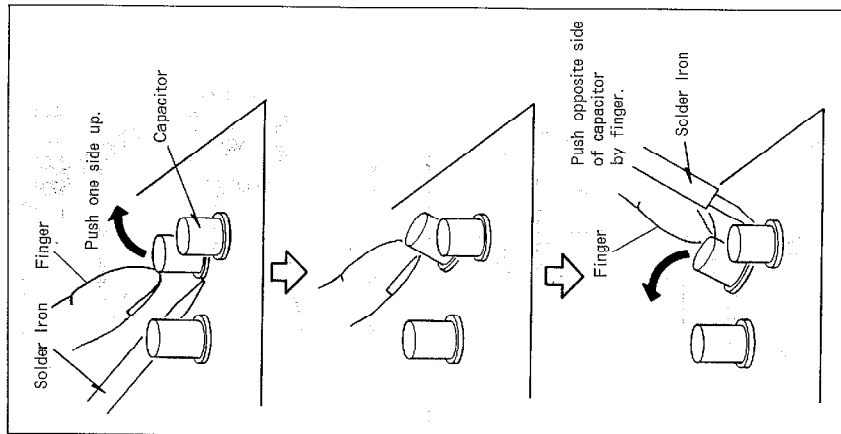


Fig.T10

5. How To Eject Manually

- (1) In case that Tape is fully unloaded.
- * Remove the cassette cover and push the "A" position as shown in Fig.T11.

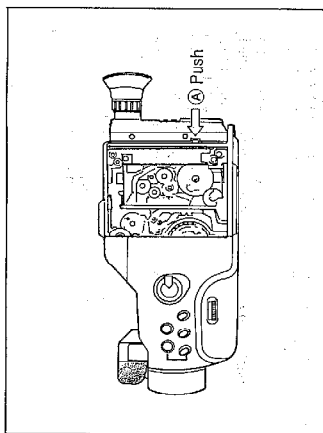


Fig.T11

- (2) In Case that Tape is not rewound completely but mechanism is fully unloaded.

- * Remove the Top case as shown in Fig.T12
- * Rotate the capstan Rotor until tape is rewound completely.
- * Eject it as procedure (1)

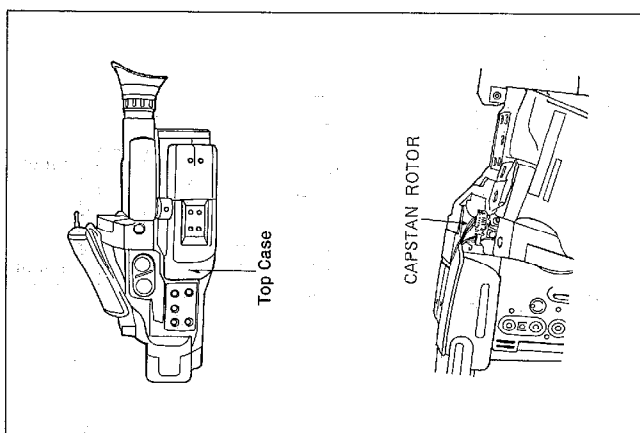


Fig.T12

- (3) In case that tape and mechanism are still loading condition.

- * Remove the cabinet parts.
- * Remove Y/C pack C.B.A. and MAIN C.B.A. loading
- * De-solder the soldering between motor and Mechanism flexible C.B.A.
- * Supply DC voltage (3V) to loading motor terminal and make it unloading.

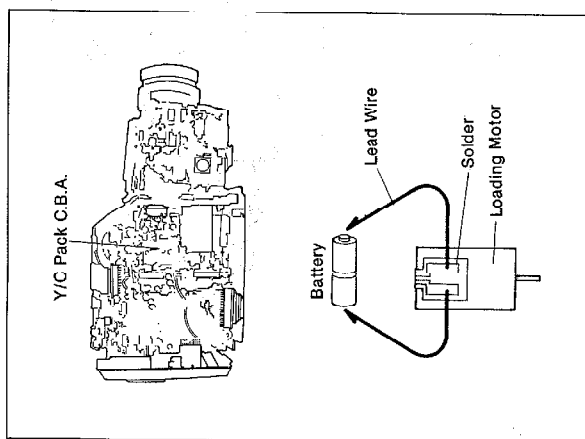
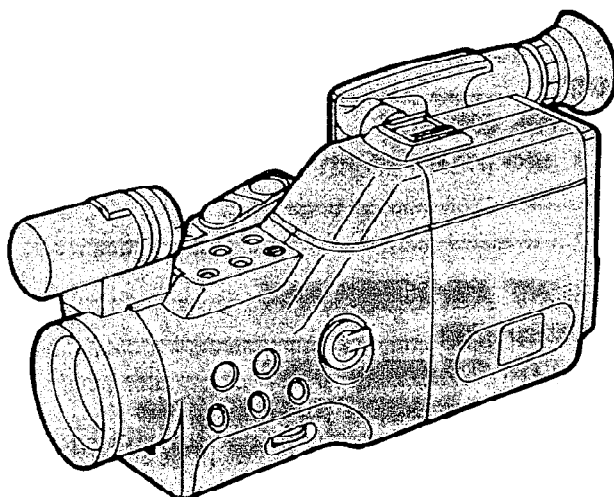


Fig.T13

S-VHS-C Movie

NV-MS70E/B/A

NV-M810EN



SPECIFICATIONS

ITEM	SPECIFICATION	ITEM	SPECIFICATION
POWER	Source: BATTERY: DC 6.0V Consumption; Recording mode; 8.0W (Battery operation)	VIDEO	HEADS: 4 rotary heads, 1 flying erase head
			OUTPUT: PHONO CONNECTOR; 1.0Vp-p 75Ω unbalanced S-Video out terminal 1.0Vp-p 75Ω unbalanced
VIDEO RECORDING SYSTEM	4 rotary heads, helical scanning system PAL	AUDIO	HEAD: 1 Stationary head (Normal Audio)
FM AUDIO RECORDING SYSTEM	4 rotary heads, helical scanning system		INPUT: MIC IN (M3); -70dB, 4.7kΩ unbalanced OUTPUT: PHONO CONNECTOR; -8dB 600Ω unbalanced
TAPE FORMAT	S-VHS-C, VHS-C Cassette Tape (Tape width 12.7mm)	WEIGHT	Approx. 1.0kg (without Battery Pack)
TAPE SPEED	SP mode: 23.39mm/s LP mode: 11.7mm/s Record/Playback Time SP mode: 45 min. with NV-SEC45E LP mode: 90 min. with NV-SEC45E FF/REW Time Approx. 4.5 min. with NV-SEC45E	DIMENSIONS	107.9(W)×128.5(H)×311.5(D)mm
		STANDARD ACCESSORIES	1 pc. AC Adaptor (VW-AS1) 1 pc. Battery Pack 1 pc. Shoulder Strap 1 pc. Cassette Adaptor 1 pc. Audio/Video Cable 1 pc. Battery for Clock Operation 1 pc. DC Input Cable 1 pc. Battery for Cassette Adaptor Operation 1 pc. S-Video Cord
CAMERA	PICK-UP ELEMENT: CCD (Charge Coupled Device)		
	STANDARD ILLUMINATION: 1,400 lux		
	MINIMUM REQUIRED ILLUMINATION: 5 lux		
	LENS: Built-in 6 : 1 Power Zoom Lens with Digital AI Auto Focus, Auto Iris, Auto Focus System, F1.4 (9~54 mm), Lens Front Diameter/φ49 mm Filter Diameter 43 mm		
	IMAGE SENSOR: 1/2 inch CCD Image Sensor		
	VIEW FINDER: 2/3' Electric View Finder		

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

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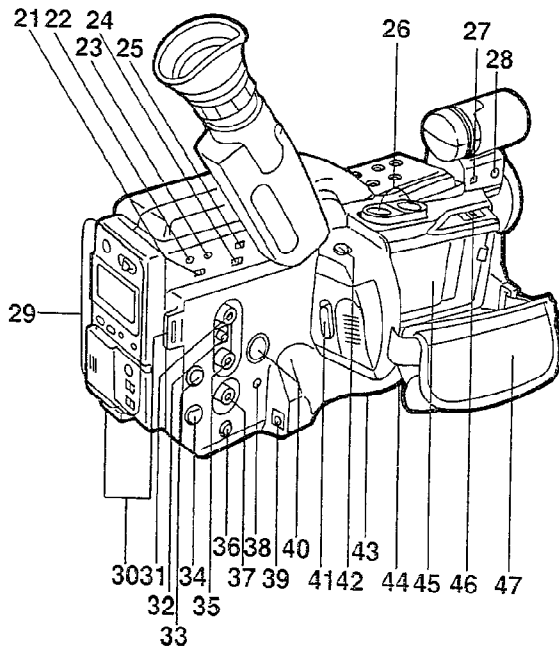
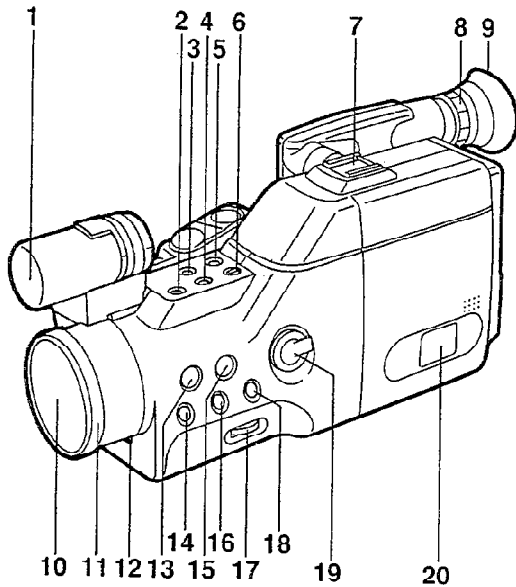
MECHANICAL REPLACEMENT PARTS LIST

ELECTRICAL REPLACEMENT PARTS LIST

SECTION 1

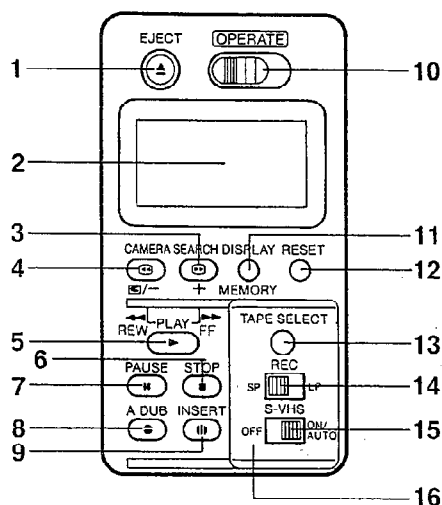
GENERAL DESCRIPTION

1-1 CONTROLS AND COMPONENTS



- 1 Built-in Stereo Microphone
- 2 Title Function On/Off Button
- 3 Titling Mode Selector Button
- 4 Title Color/Color Reverse Selector Button
- 5 Memory Button
- 6 Date/Time Selector
- 7 Accessory Shoe
- 8 Eyepiece Corrector Control
- 9 Electronic Viewfinder
- 10 White Cap
- 11 Lens Hood
- 12 Manual Focus Control
- 13 Push Auto/Zone Selector Button
- 14 Focus Mode Selector Button
- 15 Fade Button
- 16 High Speed Shutter Selector
- 17 Iris Close/Open Control
- 18 White Balance Button
- 19 Operation Selector Switch
- 20 Cassette Compartment
- 21 Edit Switch
- 22 Tracking/Date/Time Shift Button
- 23 Tracking/Date/Time Set Button
- 24 Audio Selector Switch
- 25 Digital Tracking Switch
- 26 Power Zoom Control Buttons
- 27 Filter Selector
- 28 External Microphone Socket
- 29 General Operation Control
- 30 Shoulder Strap Holders
- 31 Video Output Socket
- 32 RF DC Output Socket
- 33 Character Generator Socket
- 34 Edit Socket
- 35 Audio Output Socket (L)
- 36 Headphones Socket
- 37 Audio Output Socket (R)
- 38 Remote Control Socket
- 39 DC Input Socket
- 40 S-Video Output Connector
- 41 Recording Start/Stop Button
- 42 On Screen Display Button
- 43 Tripod Mount
- 44 Battery Compartment for Auto Date/Clock
- 45 Battery Holder
- 46 Battery Eject Lever
- 47 Grip Belt

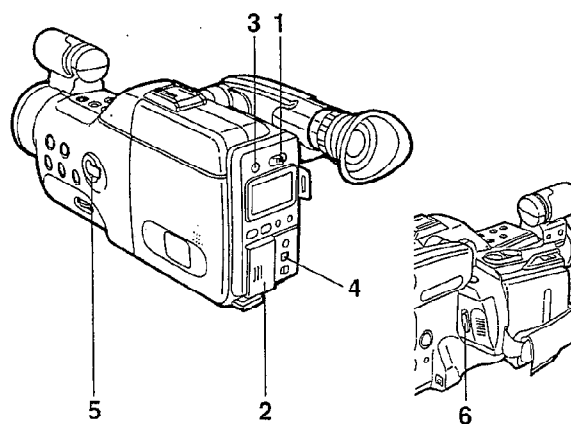
General Operation Controls



- 1 Eject Button
 - 2 LCD Display
 - 3 Fast Forward/Cue Button
 - 4 Rewind/Review Button
 - 5 Play Button
 - 6 Stop Button
 - 7 Pause/Still Button
 - 8 Audio Dubbing Button
 - 9 Insert Button
 - 10 Operation On/Off Switch
 - 11 Display/Memory Button
 - 12 Reset Button
 - 13 Tape Selector Button
 - 14 Recording Speed Selector
 - 15 S-VHS System Selector
 - 16 Camera/VTR Selector Cover
- 16 Function of the Camera/VTR Selector Cover**
- | | |
|-----------------------------|---|
| Closed | For camera recording. |
| Open (as illustrated) | For other operations than camera recording. |

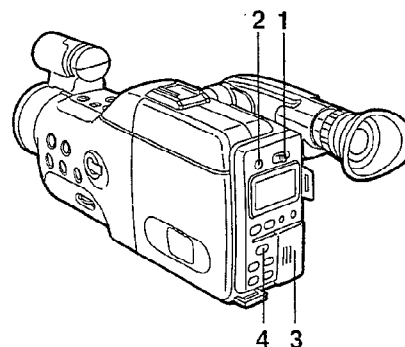
1-2 EASY OPERATIONS

Camera Recording



- 1 Turn the Movie Camera on.
- 2 Slide the Camera/VTR Selector Cover close so that it covers the Tape Running Buttons.
- 3 Insert a Video Cassette.
- 4 Set the Recording Speed Selector to "SP" or "LP".
- 5 Set the Operation Selector Switch to "AUTO LOCK".
- 6 Press the Start/Stop Button.
 - Recording starts.
 - Press this button again to stop recording.

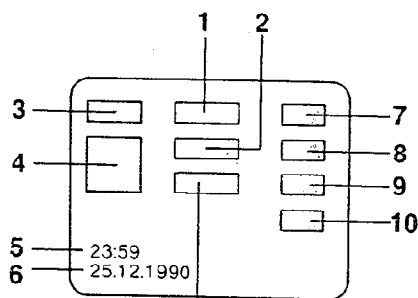
Playback



- 1 Turn the Movie Camera on.
- 2 Insert the recorded cassette.
- 3 Slide the Camera/VTR Selector cover open so that the Tape Running Buttons become accessible.
- 4 Press the Play Button.
 - Playback starts.
 - Press the Stop Button to stop playback.

1-3. INDICATIONS IN THE ELECTRONIC VIEWFINDER (EVF)

The following indications are displayed in the Electronic Viewfinder (EVF) to inform you of the conditions of the Movie Camera.



Warning/Alarm Indications

Warning/Alarm Indications



There is little battery power left. Movie Camera will be turned off in a few minutes. Replace the battery pack by a fully recharged one.



It is impossible to record because the erasure prevention tab of the cassette is not intact.

END

During recording, the tape has almost reached its end. Replace the tape with a new one. The indication will remain lit when the tape has reached its end.



When condensation has formed inside the Movie Camera, the "DEW" indication will flash and a few seconds later, the unit itself off.



Video Head Clogging (see page 42.)



When the Battery for Title Memory and Auto Date is not inserted, the indication will flash for 10 seconds after the Movie Camera is turned on.

1 Remaining Battery Power/Index Indication

E—F The "—" indications begin to disappear from right to left as the power of the Battery Pack weakens.

INDEX This indication flashes when a recording is started and it indicates that an index signal is being recorded.

2 Counter Indication

M1:23.45 Lap Time Counter

3 Tape Remaining Indication

4 Digital Memory Indication

WHT Colour Indication

WIPE ↑ Mode Indication (No indication in normal mode.)

5 Time Indication

6 Date Indication

7 Tape Running Indications

REC Recording mode

PAUSE Recording Pause mode, Rec Review

> Play mode, Camera Search (In forward direction)

II Still mode

>> Fast Forward/Cue mode

<< Rewind/Review mode, Camera Search (In reverse direction)

INST> Insert Editing mode

INSTII Insert Editing Pause mode

A.DUB> Audio Dubbing mode

A.DUBII Audio Dubbing Pause mode

8 Manual White Balance Indication



Manual Mode, Not adjusted

W.SET Manual Mode, Hold Mode

9 S-VHS System Indications

S S-VHS System

" " VHS System

Recording Mode Indications

SP SP mode

LP LP mode

10 High Speed Shutter Mode Indications

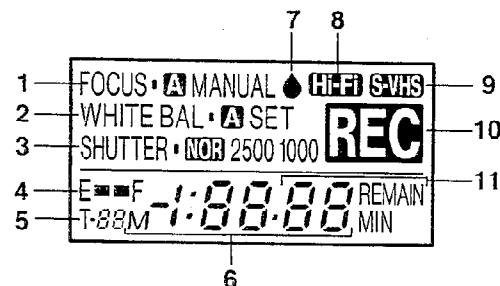
1/250 1/250 sec.

1/500 1/500 sec.

1/1000 1/1000 sec.

• Some of the above indications may light up alternately at the same place in the EVF to indicate the corresponding operating condition or warnings.

1-4 INDICATION IN THE LCD DISPLAY



1 Focus Mode Indications

[A]: Auto Focus

MANUAL: Manual Focus

2 White Balance Indications

[A]: Auto

SET: Manual mode

3 Shutter Speed Indications

[NOR]: Normal Speed

250: 1/250 sec.

500: 1/500 sec.

1000: 1/1000 sec.

4 Remaining Battery Power Indications

The "—" indications begin to disappear from right to left as the power of the Battery Pack weakens.

- 5 Cassette Display
- 6 Counter Indications
M1:23.45 Lap Time Counter
- 7 Dew Indication (◆)
- 8 Hi-Fi Indications
- 9 S-VHS Mode Indication
- 10 Recording Indication
- 11 Tape Remaining Indication

1 Align the grooves of the Battery Pack and the Movie Camera.

2 Insert the Battery Pack until it locks with a click.

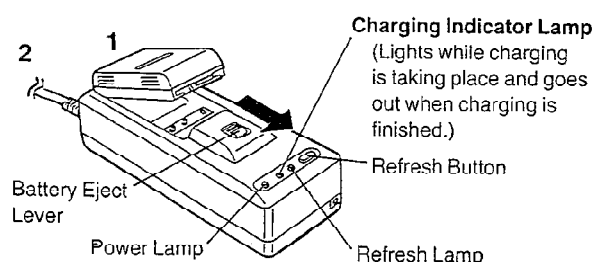
- To remove the Battery Pack, slide it to the front while keeping the Battery Eject Lever pressed.

Caution:

- Wait about 10 seconds after turning the Movie Camera off, before removing the Battery Pack.
- If the Battery Pack is removed during recording or playback, the tape remains wound around the video head cylinder and could become damaged.

1-5. BATTERY PACK

Charging



- 1 Attach the Battery Pack.
- 2 Connect the AC Adaptor to the Mains.

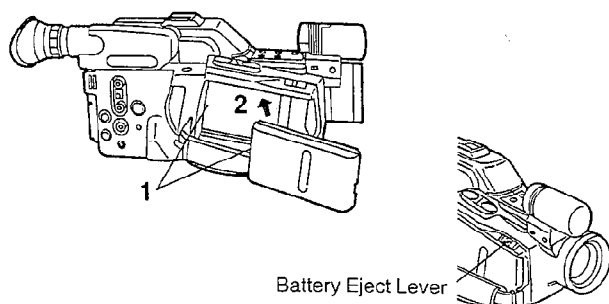
Note:

- The charging takes about 60 minutes.
- The Movie Camera can be used continuously for approx. 50 minutes with a fully charged Battery Pack.
- When the charging is completed, slide the Battery Eject Lever in the direction of the arrow and remove the Battery Pack.

■ **Refreshing function**

The Battery Pack can be recharged for repeated use. However, if it is recharged repeatedly while there is still some charge left, its charging capacity will be gradually reduced. Therefore, if you often need to recharge semi-discharged Battery Packs, attach the Battery Pack to the AC Adaptor, connect the AC Adaptor Mains, and press the Refresh Button to completely discharge the Battery Pack. (The Refresh Lamp will light up, and when the discharging is finished, the Charging Indicator Lamp will light up instead.) This will increase the charging capacity and extend the operating life of the Battery Pack. Therefore, if the operating life of the Battery Pack becomes noticeably shorter, refresh it. (It is recommended to refresh the Battery Pack approx. once every five rechargings.)

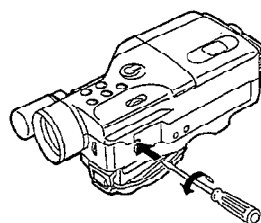
Attaching



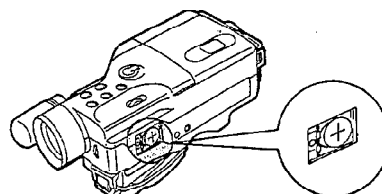
1-6 SETTING THE CLOCK

How to Insert the Battery for the Clock Operation

- 1 Remove the lid.



- 2 Insert the "CR2032" size battery with polarities (+ and -) aligned correctly and then replace the lid.



Note:

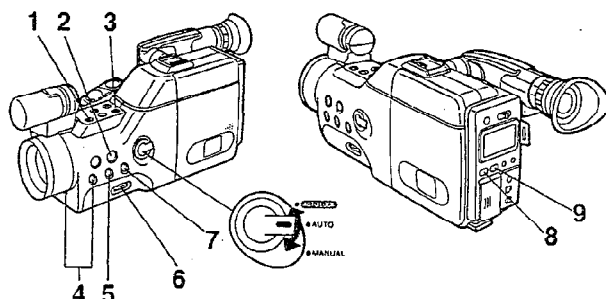
- This battery is necessary for the Date & Time, Title, S-VHS and White Balance modes to be memorized by the Movie Camera.
- If the battery is not inserted or if it is exhausted, the indication "BACKUP" in the EVF will flash for approximately 10 seconds when turning the Movie Camera on.
- When replacing the battery while the Time & Date Indications are still correct, connect the Movie Camera to the AC Adaptor for the duration of the battery replacement so that the time will remain unchanged.

CAUTION FOR BATTERY REPLACEMENT

- The life of the battery is about one year. Inspect and if necessary, replace the Battery once a year.
- Load the new battery with its polarities (+ and -) aligned correctly.
- Remove spent battery immediately and dispose of it.
- Do not try to short-circuit, recharge or heat the battery and do not throw it into a fire.

1-7. OPERATION SELECTOR SWITCH

When the Operation Selector Switch is set to the "AUTO" or "AUTO LOCK" position, some functions cannot be operated.



Operation Modes and Usable Functions

When the Operation Selector Switch is set to the "AUTO LOCK" or "AUTO" position, the controls and functions marked with "No" cannot be operated. When using this Movie Camera for the first time, use it with the Operation Selector Switch set to "AUTO LOCK" or "AUTO".

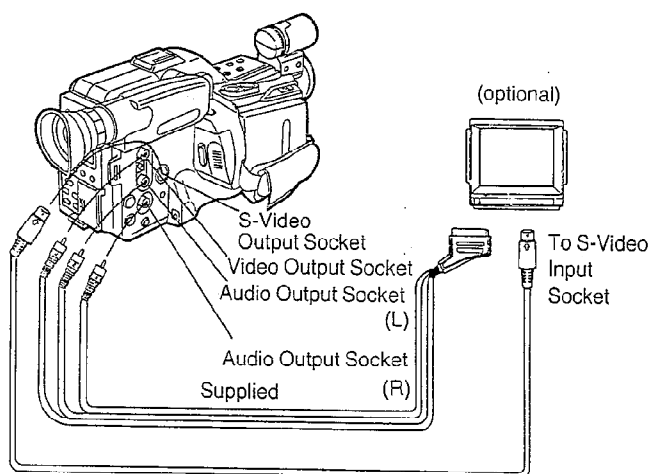
•When starting to shoot in a hurry, setting to either of these positions will prevent mistaken operations.

•This switch has nothing to do with operation modes other than those connected with shooting.

Operation Buttons	Operation Selector Switch		
	MANUAL	AUTO	AUTO LOCK
1 Title Function On/Off Button	Yes	Yes	No
2 Fade Button	Yes	Yes	No
3 Date/Time Selector	Yes	Yes	No
4 Focus Adjusting Button Manual Focus Volume	Yes	No (Auto)	No (Auto)
5 High Speed Shutter Selector	Yes	No (Normal)	No (Normal)
6 Iris Close/Open Control	Yes	No (Auto)	No (Auto)
7 White Balance Button	Yes	No (Auto)	No (Auto)
8 Rewind/Review Button	Yes	Yes	No
9 Fast Forward/Cue Button	Yes	Yes	No

1-8. PLAYBACK VIA TV SET (CONNECTIONS)

TV Set with AV Input



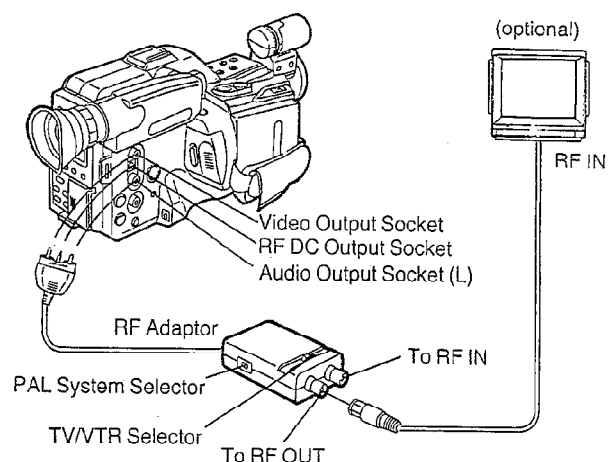
Playback via S-Video Cable

Connect this cable if the TV set is equipped with an S-Video Input Socket.

Playback on a table Type VTR

Use the Cassette Adaptor.

TV Set without AV Socket



TV

Tune to UHF channel 36.

TV/VTR Selector on the RF Adaptor

VTR: For playing back a cassette

TV: For watching TV.

PAL System Selector

G: For continental Europe

I: For U.K.

Note:

When an RF Adaptor is used, the playback sound will be in mono.

1-9 ACCESSORIES

Standard Accessories

- AC Adaptor
- Battery Pack
- Cassette Adaptor
- Shoulder Strap
- Audio/Video Cable
- DC Input Cable
- S-Video Cord
- Battery for Cassette Adaptor Operation
- Battery for Clock Operation

Optional Accessories

- RF Adaptor (VW-RF7E)
- Car Battery Cord (VW-ACC5)
- Pause Remote Control Unit (VW-RM1)
- Character Generator (VW-CG2)
- System Carrying Case (VW-SHMC70E)
- Handgrip (VW-GPC1E)
- VITC Generator (VW-VG1E)
- VITC Editing Controller System (VW-EC10E)
- Editing Controller (VW-EC300E)

SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohm meter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1M ohm and 5.2M ohm. When the exposed metal does not have a return path to the chassis, the reading must be

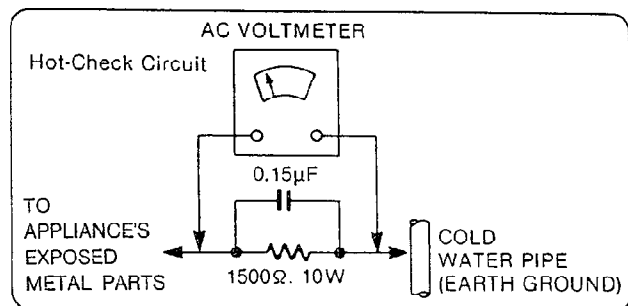


Figure 1

LEAKAGE CURRENT HOT CHECK (See Figure 1)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5k ohm, 10 watts resistor, in parallel with a 0.15uF capacitor, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

ELECTROSTATICALLY SENSITIVE(ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip"

components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).

X-RADIATION

WARNING:

1. The potential source of X-Radiation in the display is the High Voltage section and the picture tube.
2. When using a picture tube test equipment for service, make sure the equipment is capable of handling 25.0kV without causing X-Radiation.

NOTE: It is important to use an accurate periodically calibrated high voltage meter.

1. Turn Bright and Contrast controls fully counterclockwise.
2. Set Service switch to SERVICE.
3. Measure the high voltage. The high voltage meter (electrostatic type) reading should indicate 23.0kV +/- 1.0kV. If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.
4. To prevent an X-Radiation possibility, it is essential to use the specified picture tube.

SECTION 2

ADJUSTMENT PROCEDURES

2-1 DISASSEMBLY PROCEDURES

2-1-1. DISASSEMBLY FLOWCHART

The following flowchart describes the order or steps for removing the cabinet parts and certain printed circuit boards in order to make access to the items needing servicing. To reassemble the unit, follow the steps in reverse order.

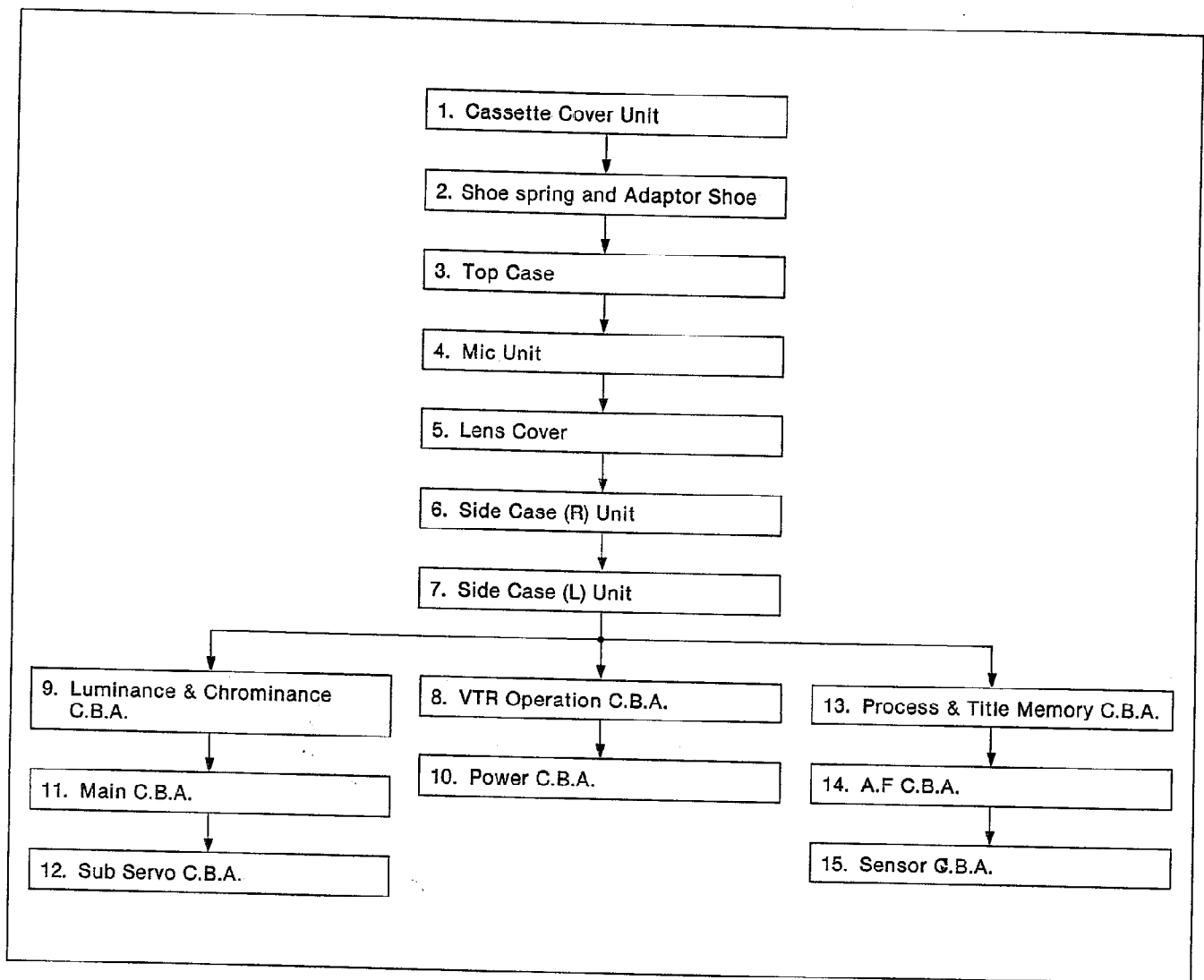


Fig. D1

2-1-2. DETAILED DISASSEMBLY METHOD

1. Removal of the cassette cover
Remove ... 2 screws (A)

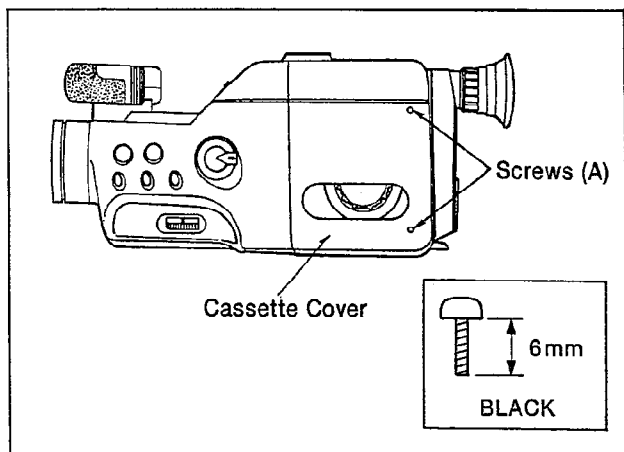


Fig. D2

2. Removal of Shoe spring and Adaptor Shoe
Remove ... 1 screw (B)
4 screws (C)

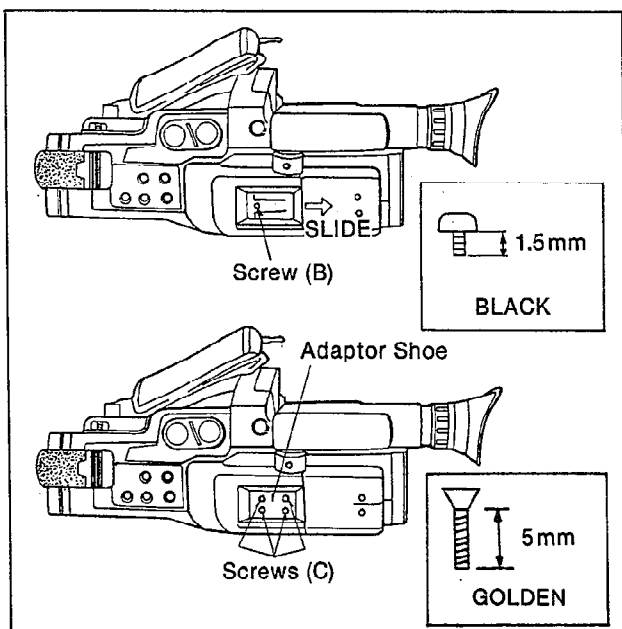


Fig. D3

3. Removal of Top Case
Remove ... 1 screw (D)
Pull Up Top case to up right.

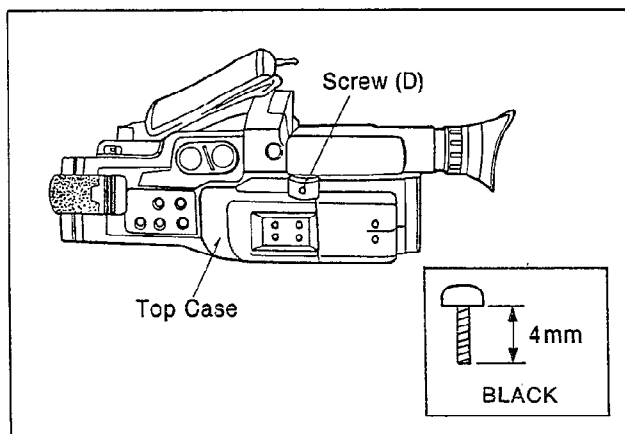


Fig. D4

4. Removal of Mic unit
Remove ... 1 screw (E)
Microphone connector.

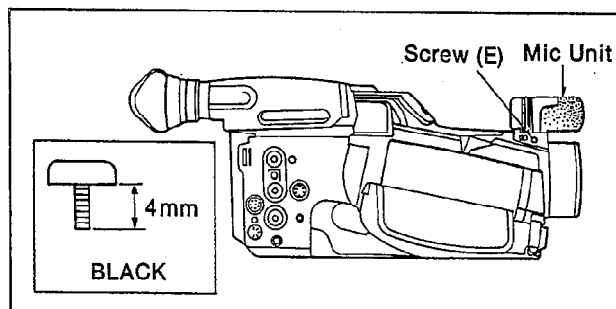


Fig. D5

5. Removal of Lens cover
Put the palm to the Lens Hood and remove it by rotating counter-clockwise.
Remove ... 2 screws (F).
Rotate Lens Cover to counter-clockwise (approx 1cm) and remove it.

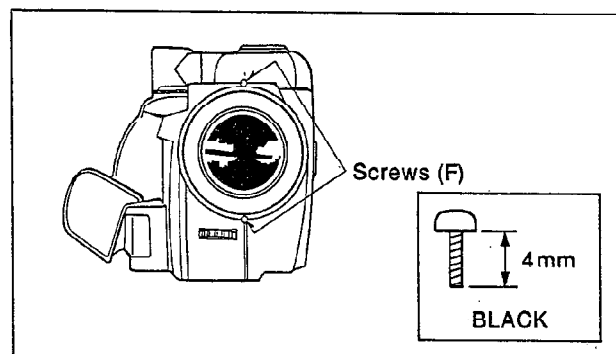


Fig. D6

6. Removal of side case (R) unit
Remove ... 6 screws (G)

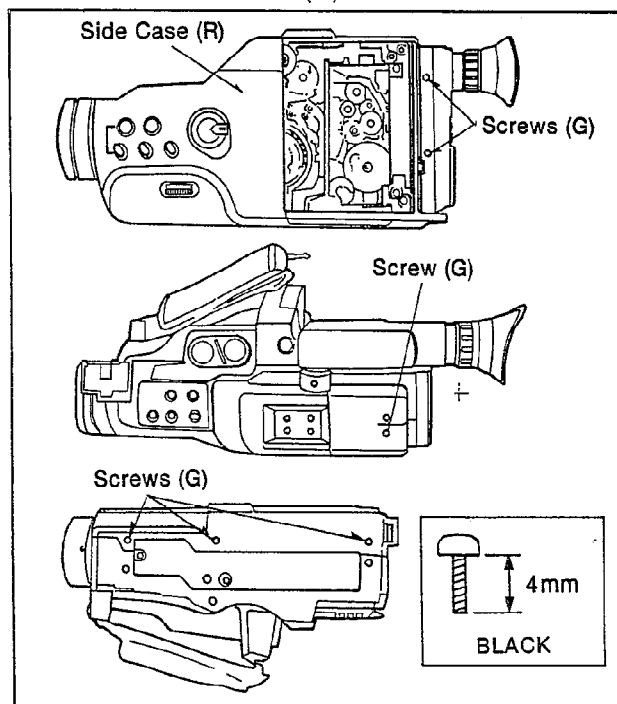
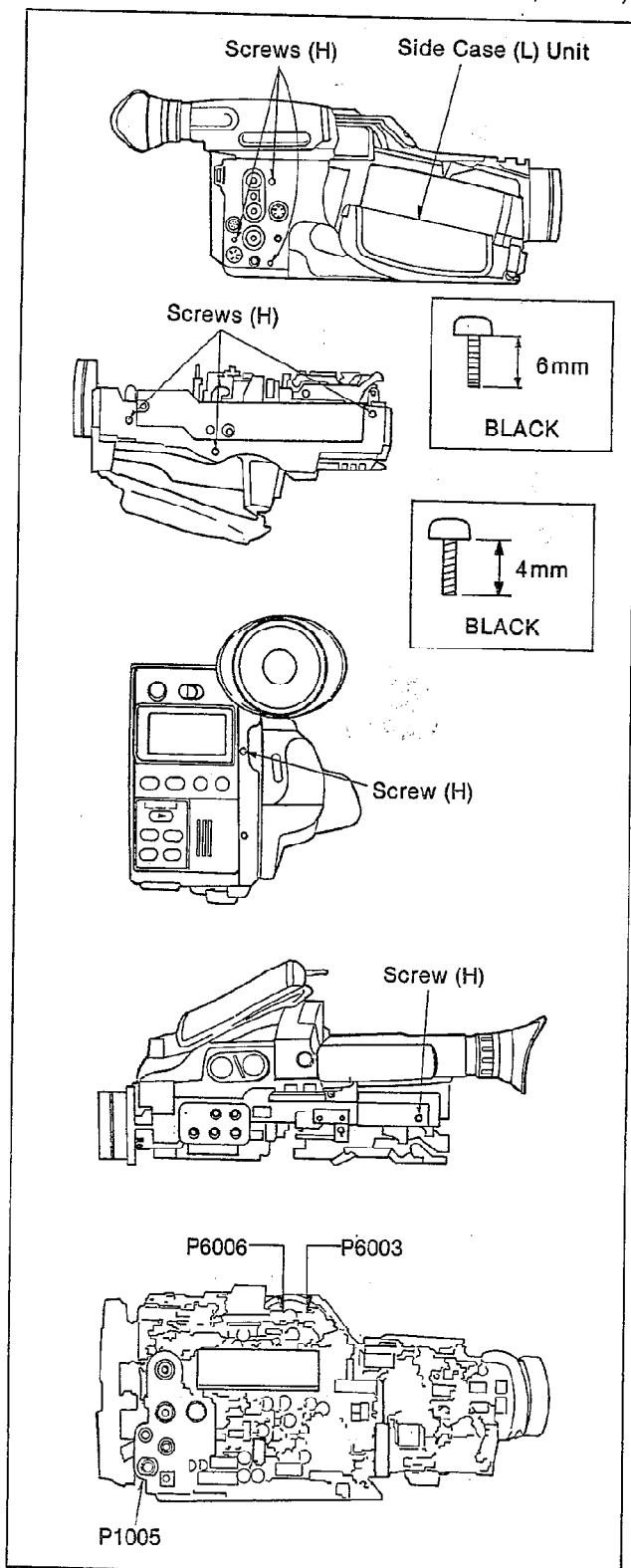
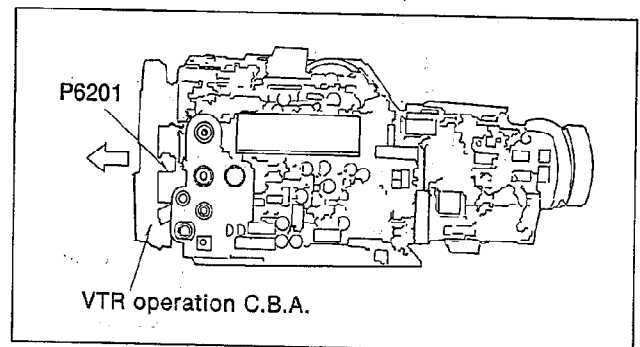


Fig. D7

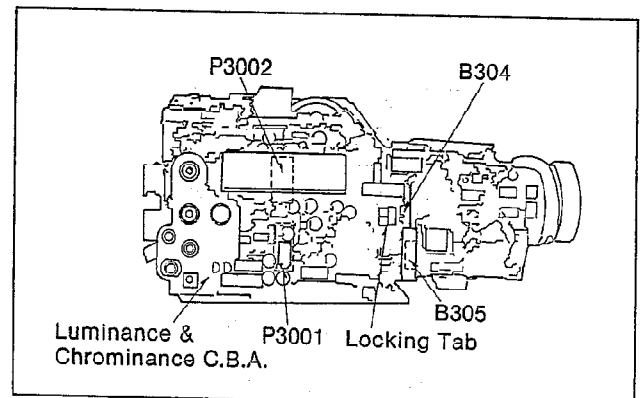
7. Removal of side case (L) unit
 Remove ... 8 screws (H)
 3 connectors (P6003, P6006, P1005)



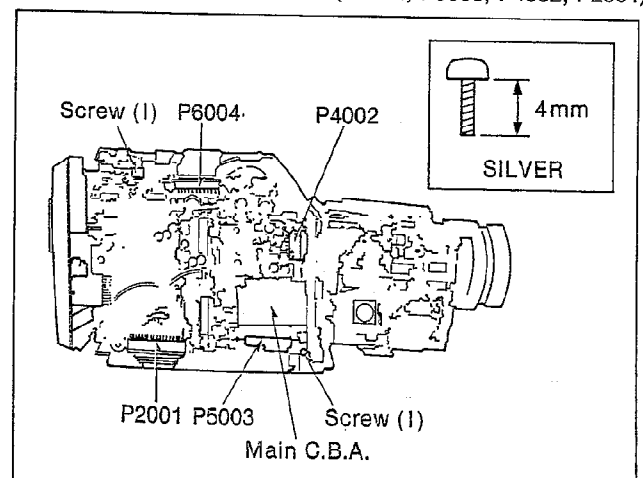
8. Removal of operation C.B.A.
 Slide it to arrow mark.
 Remove ... Connector (P6201)



9. Removal of Y/C pack C.B.A.
 Take out ... Locking Tab
 Remove ... Connectors (B304, B305, P3001, P3002, P6010)



10. Removal of power C.B.A.
 Take out ... Connectors (P1001, P1003)
 11. Removal of Main C.B.A.
 Remove ... 2 screws (I)
 connectors (P6004, P5003, P4002, P2001)



12. Removal of Mechanism Flexible C.B.A.
 Remove ... 8 screws (J)
 4 connectors (K)
 Resolder ... 14 soldering portions (L)

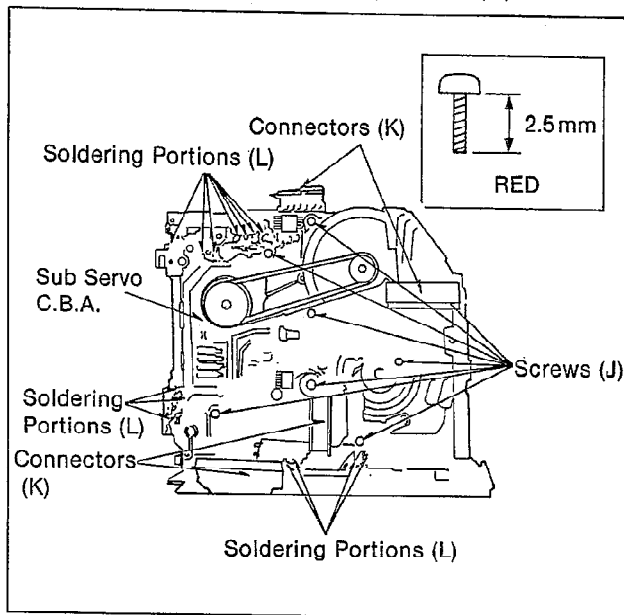


Fig. D12

14. Removal of AF C.B.A.
 Remove ... 1 screw (N)
 2 connectors (FP701, FP702)

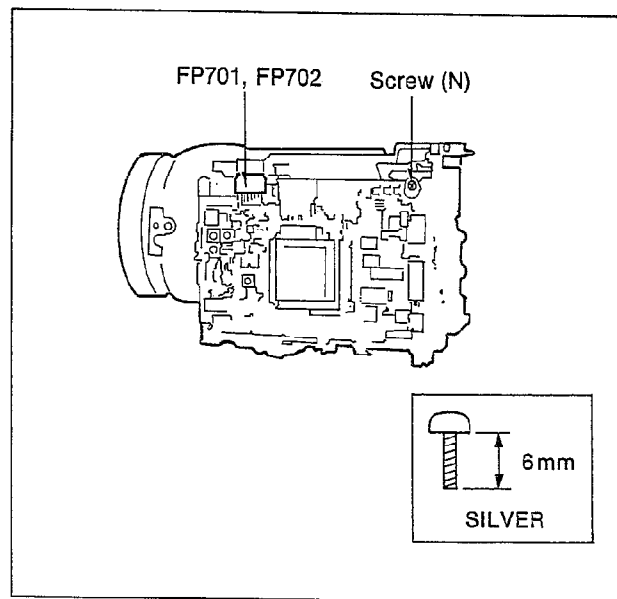


Fig. D14

13. Removal of Process C.B.A. & Digital Memory C.B.A.
 Remove ... 2 screws (M)
 4 connectors (B301, B302, B303, B306)

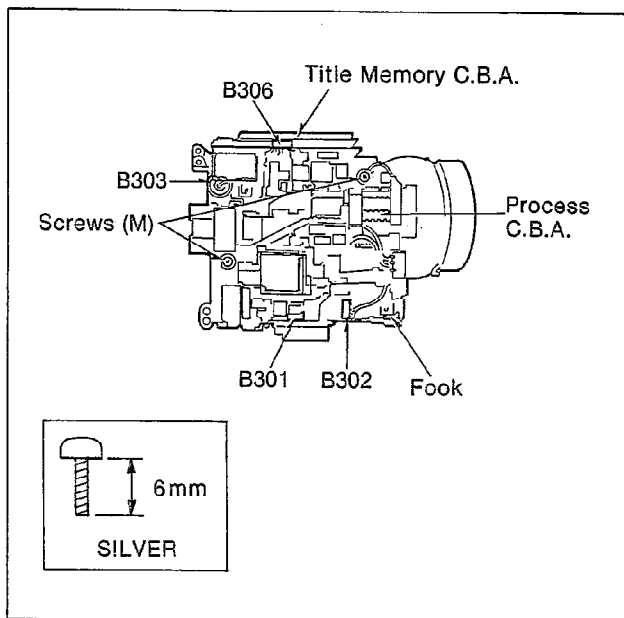


Fig. D13

15. Removal of sensor C.B.A.
 Remove ... 2 screws (O)

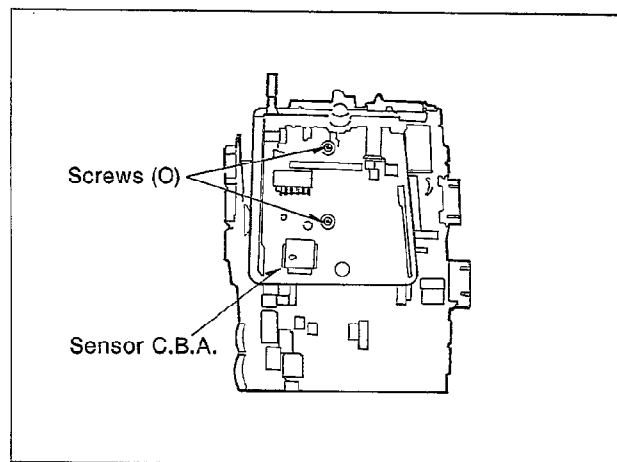


Fig. D15

2-2 REPLACEMENT OF THE CYLINDER UNIT

2-2-1 REPLACEMENT OF THE UPPER CYLINDER UNIT

Work with extremely care when removing or replacing the Upper Cylinder Unit.
Do not touch the Video Head during servicing.

1. Remove 2 screws as shown below.
2. Unsolder 18 soldered portions indicated by arrows on the Circuit Board.
3. Remove the Upper Cylinder Unit by lifting it upward

Note:

Soldered portion can be easily removed by using solder sucking wire, etc.

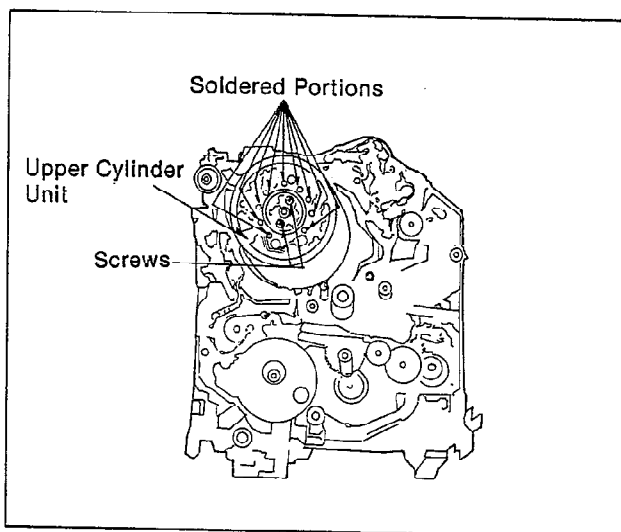


Fig. D16

4. The Upper Cylinder Unit can be reinstalled by reversing the removal procedure, however, when the Upper Cylinder is reinstalling, be extremely carefull so that white portion of circuit Board of the Upper Cylinder correctly matches the white portion of the bottom Cylinder.

Note:

- 1) If the Upper Cylinder Unit is reversely installed, no colour will appear when play back a pre-recorded tape.

2-2-2 REPLACEMENT OF DD CYLINDER UNIT

1. Remove the 3 screws and connector.
2. Take out D.D. Cylinder carefully.

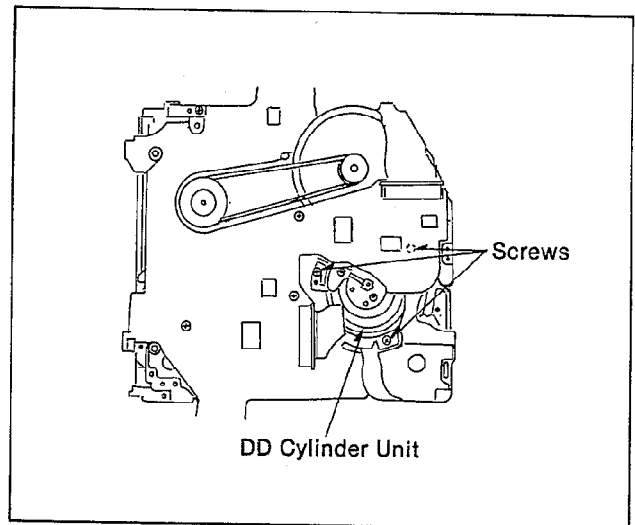


Fig. D17

Note:

Since there is very little clearance between the D.D. Cylinder Unit and the chassis, remove the D.D. Cylinder Unit carefully.

3. Reinstall the new D.D Cylinder Unit, tighten the 3 screws and reconnect the connector.

Note:

- (1) Gently rub the video head in direction of tape travel with Head cleaning stick.
- (2) After replacement, confirm the performance.
If any further maintenance is required, perform "TAPE INTER-CHANGE ABILITY ADJUSTMENT".

2-3. REPLACEMENT AND ADJUSTMENT PROCEDURES

2-3-1. DISASSEMBLY PROCEDURES OF ZOOM MOTOR AND ZOOM

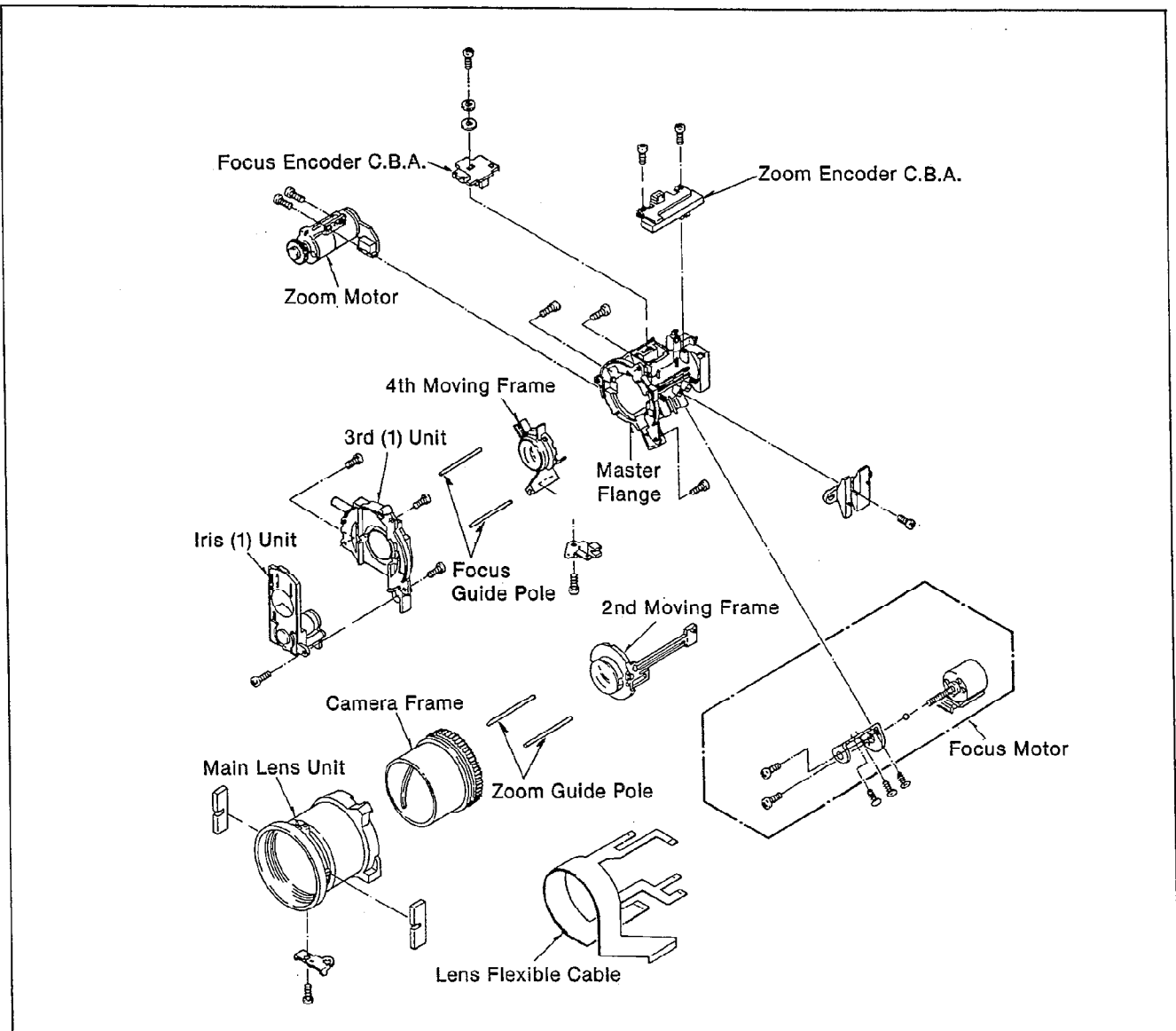


Fig. C1

- (1). Remove the Camera unit from the S-VHS-C Movie.
- (2). Remove the C.B.A. (Camera Process, Auto Focus, Sensor).
- (3). Loosen 2-Screw and remove the Zoom Motor Unit.
- (4). Loosen 3-Screw and remove the Cam Frame, 2ND Moving Frame (Zoom Lens) and the Zoom Guide pole as shown Fig. C2 and C3.

NOTE: Special oil sprayed at the surface of Guide Pole.
Therefore handling of Guide Pole Requires care.

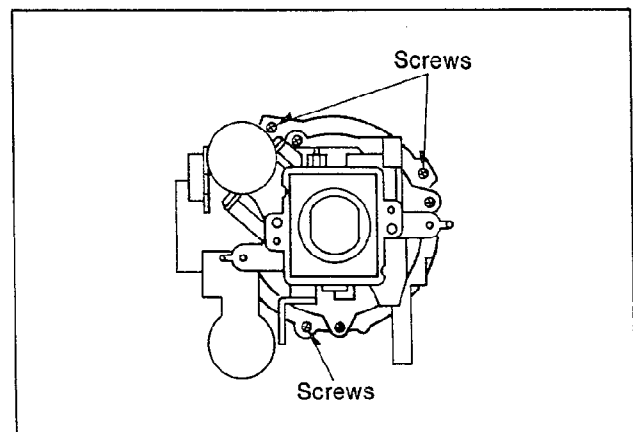


Fig. C2

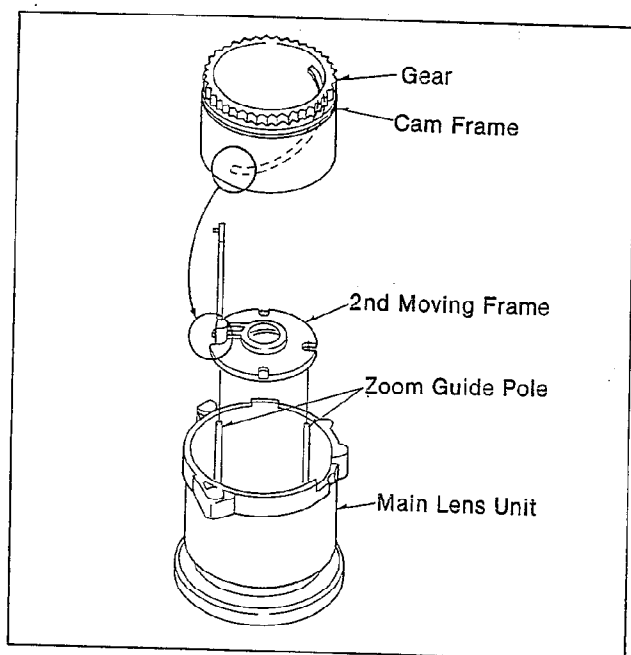


Fig. C3

2-3-2. ASSEMBLY PROCEDURES OF ZOOM LENS.

- (1).At first,Set the Lens unit that surface of look down as shown in Fig.C3.
- (2).Insert the Guide Pole to Main lens Units.
- (3).Insert the 2ND Moving Frame(Zoom Lens) to Guide.
- (4).Insert the Cam Frame to Main Lens Unit so that the end of ditch on Cam-Frame meet to cutting edge of the 2ND Moving Frame(Zoom Lens). After that fix the pole Guide by finger, and then turn the Gear on the Cam Flame in both direction to confirm the smooth movement of 2ND Moving Frame(Zoom Lens).
- (5).Insert the 3RD unit then tighten the 3-screws.

2-3-3. DISSASSEMBLY PROCEDURES OF FOCUS MOTOR AND 4TH MOVING FRAME (FOCUS LENS)

- (1).Loosen 3-Screws and remove the Focus Motor as shown in Fig.C4.

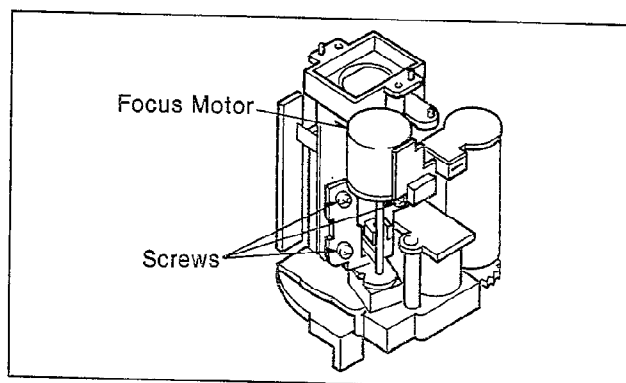


Fig. C4

- (2).Set the unit lengthwise that surface of Lens look down and remove the 3 screws as shown in Fig.C5.

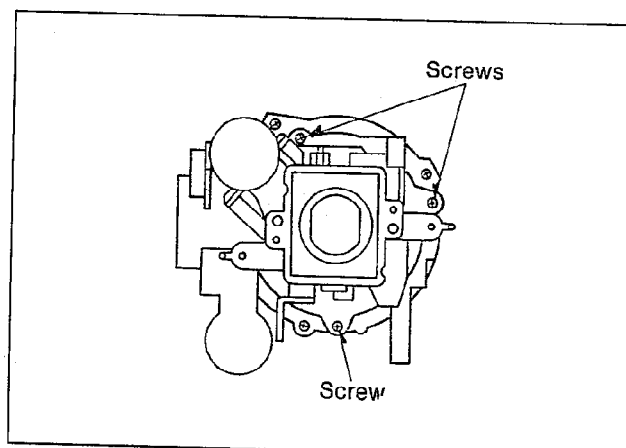


Fig. C5

- (3).Pull off the hook on the Zoom Encoder. And pull up the Lens to right as shown in Fig C6.

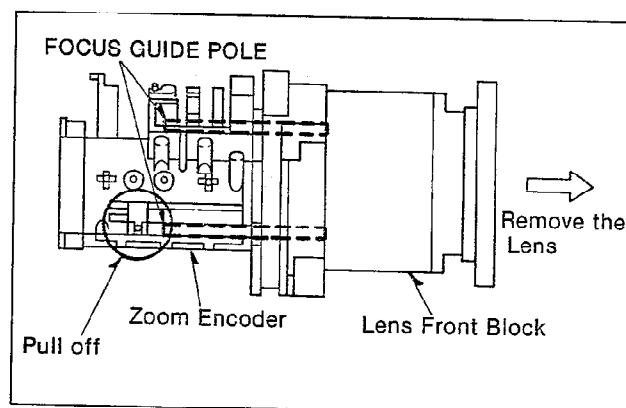


Fig. C6

- (4).Remove the 4TH Moving Frame unit(Focus Lens).

2-3-4 ASSEMBLY PROCEDURES OF FOCUS LENS.

- (1).Insert the 4TH Moving Frame unit so that insert the Zoom Guide Pole and Focus Guide Pole as shown in Fig.C3 and C6.

2-4 ASSEMBLY ADJUSTMENT PROCEDURES OF MECHANISM

The mechanism of this model is mostly engaged to the system control circuit, through the mode select switch.

Therefore the relation between the mode select switch and cam gear decides all further mechanical movement of the mechanical parts such as levers, gears, rollers and so on. If these parts are fixed improperly, the units will be unloaded or compulsory stopped.

And it will result being damaged at any mechanical or electrical parts.

2-4-1 ASSEMBLY PROCEDURES OF T-RAIL UNIT AND LOCK BASE

- (1). Install a T-Rail Unit and Lock Base Unit as shown in Fig. M1 and M2.

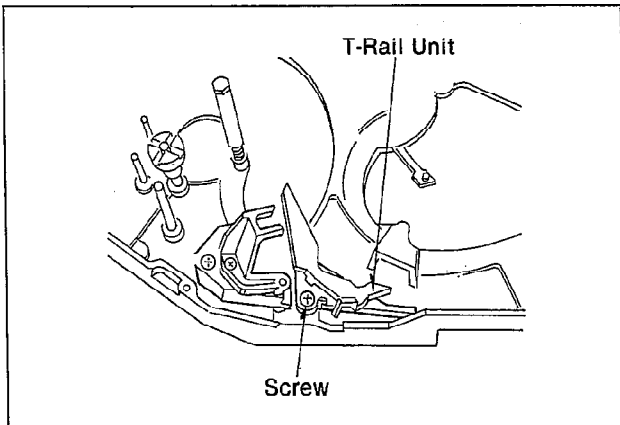


Fig. M1

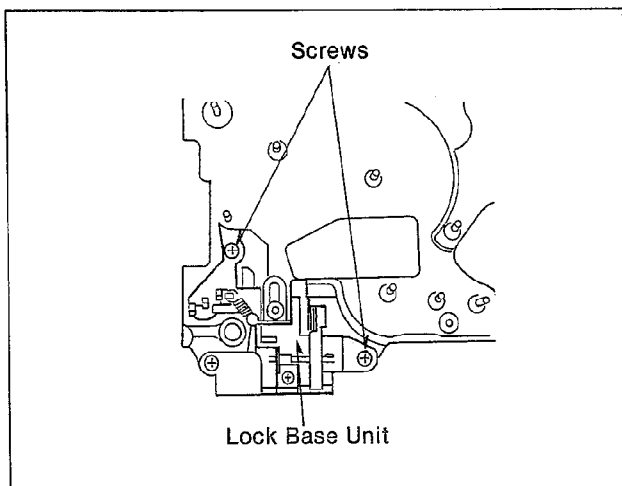


Fig. M2

2-4-2. ASSEMBLY PROCEDURES OF CAM GEAR AND ZENEBA GEAR

- (1). Install a Cam Gear so that phase mark on the Cam Gear, with its point turned up, and then insert the Cut washer as shown in Fig.M3.

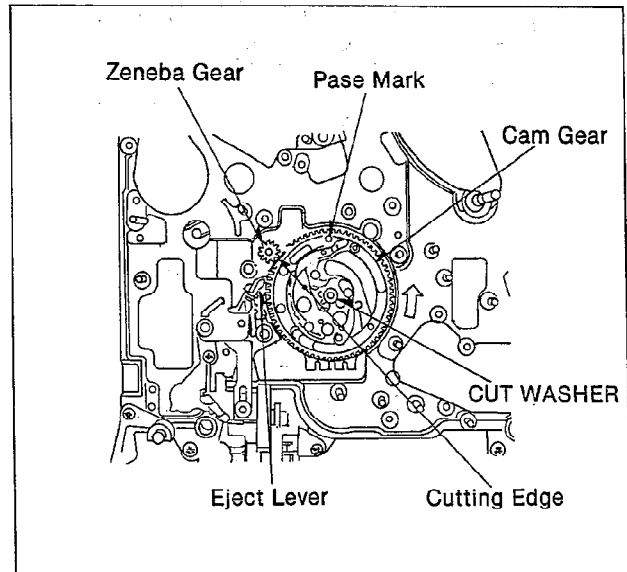


Fig. M3

NOTE:

If can't install the Cam Gear, Eject Lever caught on the Cam Gear.

The Cam Gear turn to the left for free from the Eject Lever and then install a Cam Gear.

- (2). Install the Zeneba Gear so that cutting edge of the Zeneba Gear face to the Cam Gear as shown in Fig.M4.

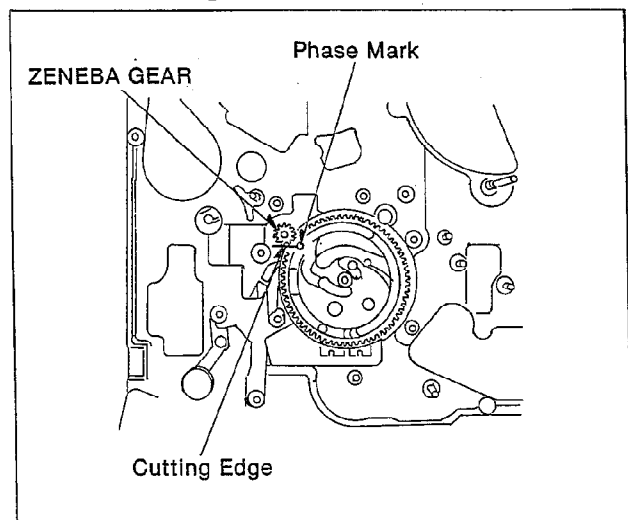


Fig. M4

NOTE:

When installation of the these Gears are finished, make sure that phase mark on the Cam on the Cam Gear face to the Zeneba Gear.

2-4-3. ASSEMBLY PROCEDURES OF S-BOARD UNIT AND GEAR

- (1). Install the S-Board Unit as shown in Fig.M5.

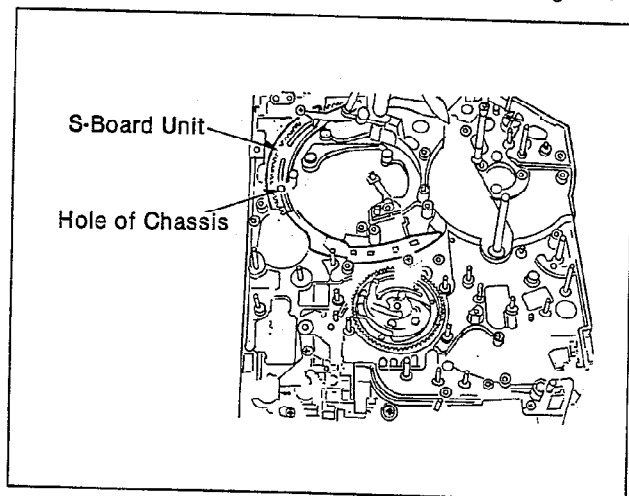


Fig. M5

NOTE

1: S-Board Unit contain the S-Rack, S-Rack Guide, S-Shaft Holder Unit and S2 Roller Post unit.

NOTE

2: The hole of S-Rack is exactly in line with the hole of chassis.

- (2). Install the Loading Gear-S so that the hole of Loading Gear is exactly in with the hole of metal frame of Loading Gear-S Unit as shown in Fig.M6.

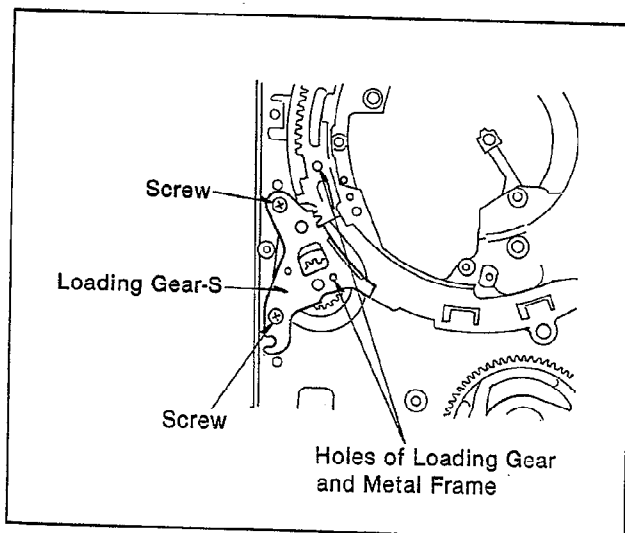


Fig. M6

2-4-4. ASSEMBLY PROCEDURES OF T-RACK GUIDE, T-RAIL, LOADING GEAR T2, LOADING GEAR T1, AND LOADING GEAR 5

- (1). Install the T-Rack Guide as shown in Fig.M7.

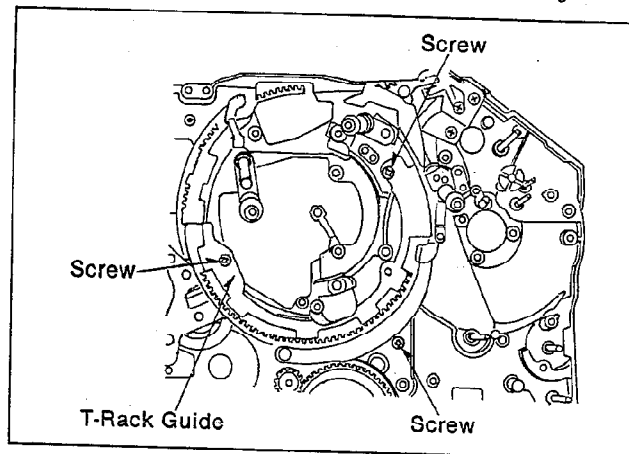


Fig. M7

- (2). Install the T-Rail(R) Unit as shown in Fig.M8.

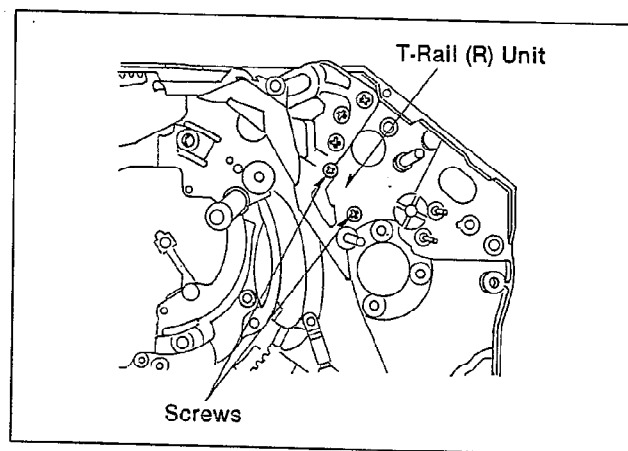


Fig. M8

- (3). The 1st tooth on the T-Rack Guide face to the hole of Guide as shown in Fig.M9.

(Expanded View of Adjustment Portion)

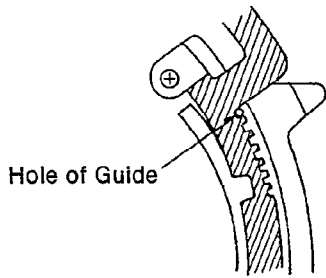


Fig. M9

2-4-5. ASSEMBLY PROCEDURES OF BAND GUIDE AND S-RAIL UNIT.

- (1). Install the Band Guide and then insert the Cut Washer as shown in Fig.M12

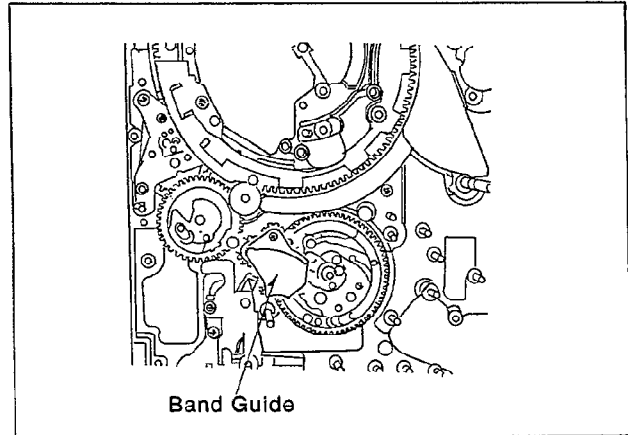


Fig. M12

- (4). Install the Loading Gear-T2 so that the mark on the the Loading Gear T2 is exactly in line with the mark of Loading Gear S as shown in Fig. M10 and M11.
- (5). Install the Loading Gear-T1 so that the mark on the Loading Gear-T1 is exactly in line with the hole of T-Rack Guide.
- (6). Install the Loading Gear 5.
- (7). Insert the Cut Washer to each Loading Gear when phase of each gears are collect.

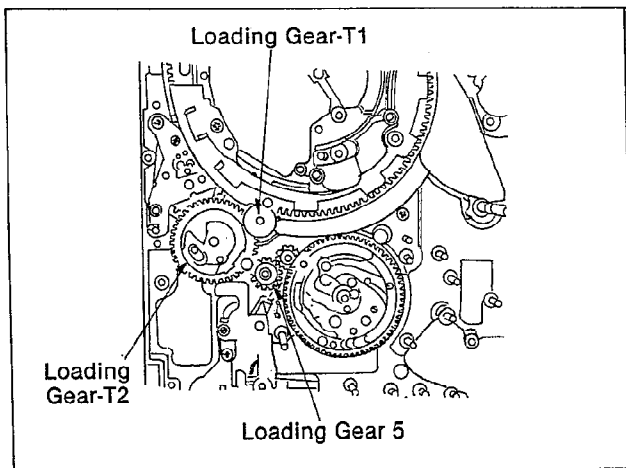


Fig. M10

- (2). Install the S-Rail Unit and then tighten the 3-Screws as shown in Fig.M13.

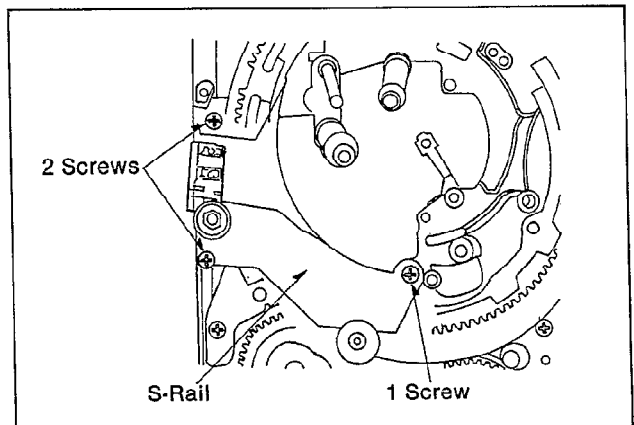


Fig. M13

2-4-6. ASSEMBLY PROCEDURES OF T-RAIL AND S-TV STOPPER.

- (1). Install the T-Rail and then tighten the 3-Screws as shown Fig.M14.

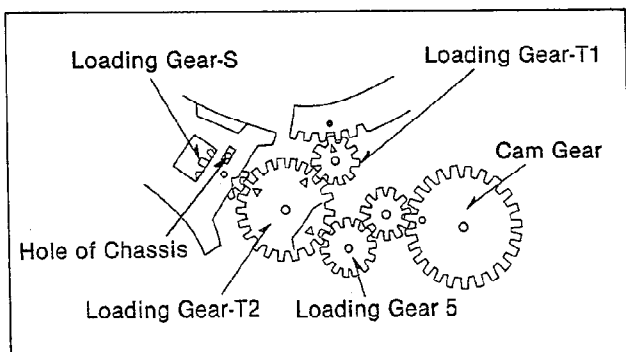


Fig. M11

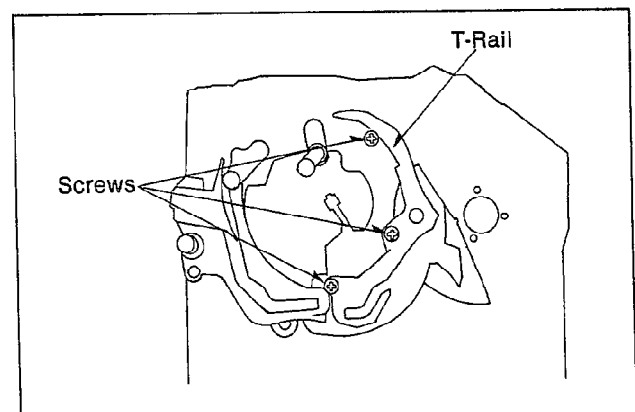


Fig. M14

- (2). When installing of T-Rail finished, turn the Cam Gear to counter-clockwise that set the Roller Posts into stop position as shown in Fig. M15 and M16.

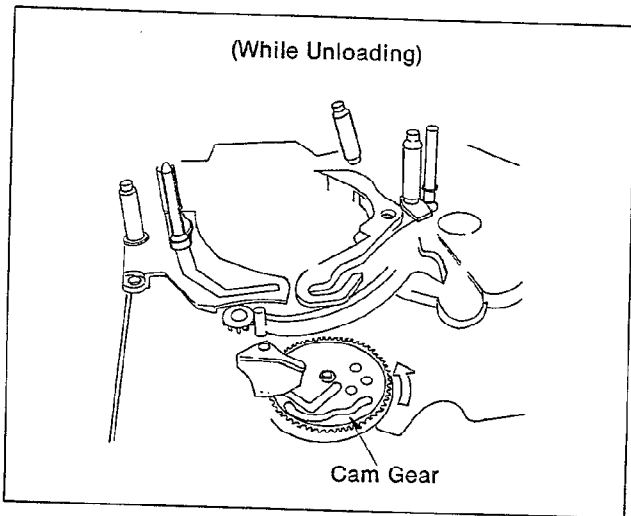


Fig. M15

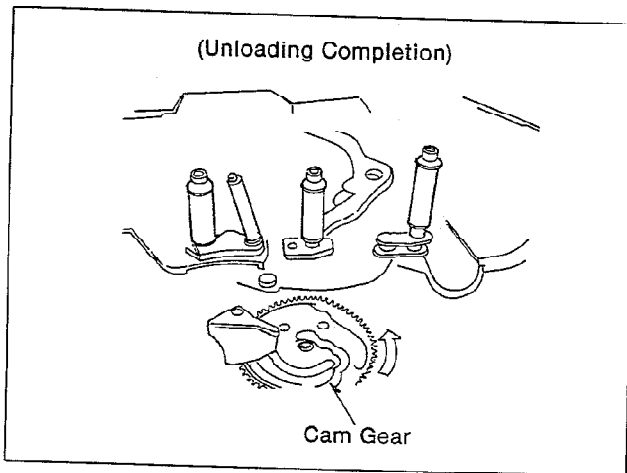


Fig. M16

NOTE:
Roller posts is made up of S2 Roller post, T-Roller Post, and Roller Post.

- (3). Install the S-TV Stopper and then tighten the 2-Screws as shown in Fig. M17.

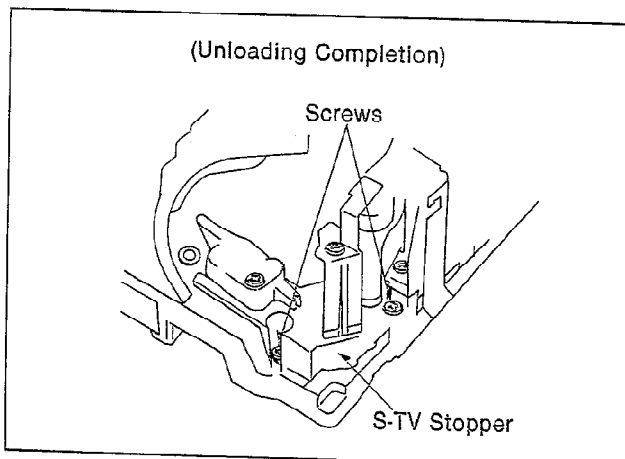


Fig. M17

NOTE:

Before install of the S-TV Stopper, install the the Impedance Roller unit into the S-TV stopper.

2-4-7. ASSEMBLY PROCEDURES OF SECTOR GEAR AND PINCH ARM UNIT

- (1). Install the Sector Gear so that insert the pin of Sector Gear in the ditch on the Cam Gear.
And insert the Pin to the Sector Gear from the Mechanism chassis as shown in Fig. M18.
After that, install the 2-Springs.

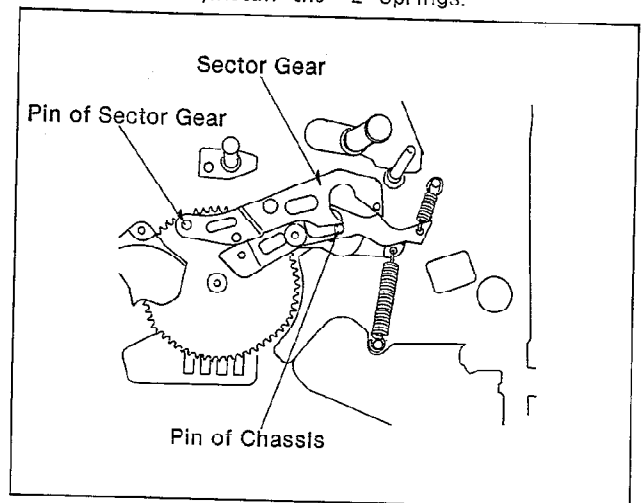


Fig. M18

- (2). When the installing of the Sector Gear is finished, turn the Cam Gear to clockwise that set the Mechanism to play position (loading end) as shown in Fig. M19.

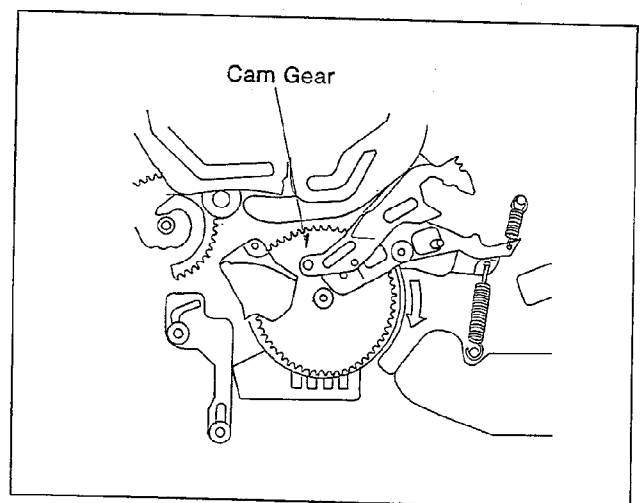


Fig. M19

- (3) Install the Pinch Arm Unit, and then insert the E-Ring as shown in Fig. M20 and M21.

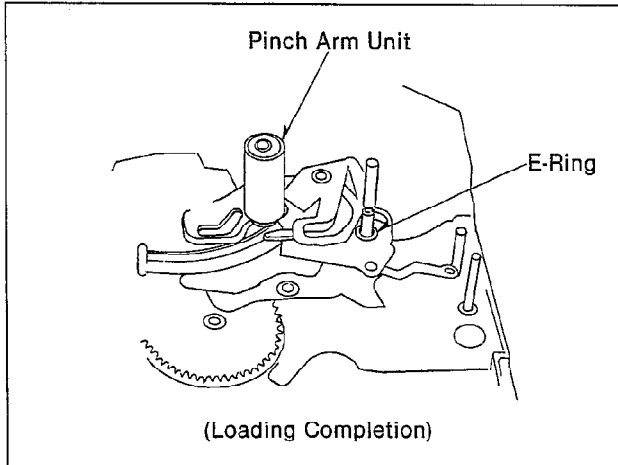


Fig. M20

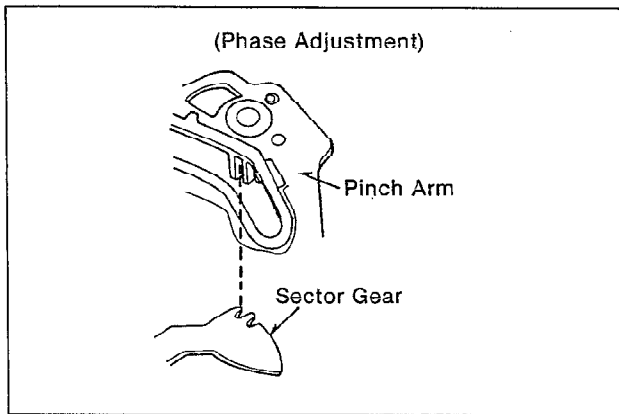


Fig. M21

- (4) Insert the T1-returner Spring so that insert a hooked end(short side) in the hole of the Pinch Arm Base as shown in Fig.M22.

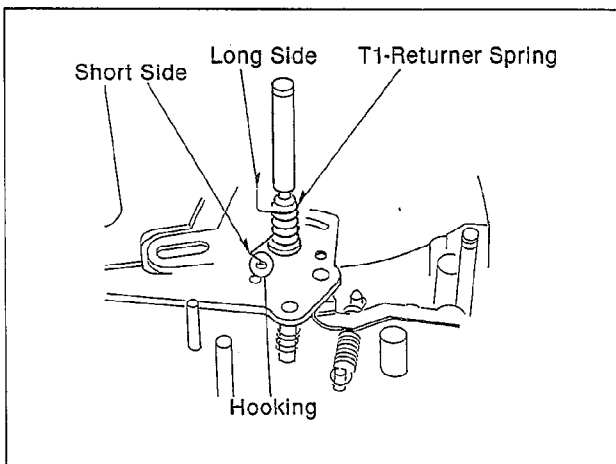


Fig. M22

- (5) Make sure of up side of T1-Returner, after that install the T1-Returner. Then insert hooked end(long side) of T1-Returner Spring in the hole of T1-Returner. Then, turn the T1-Returner to clockwise. Finally, insert the E-ring as shown in Fig.M23.

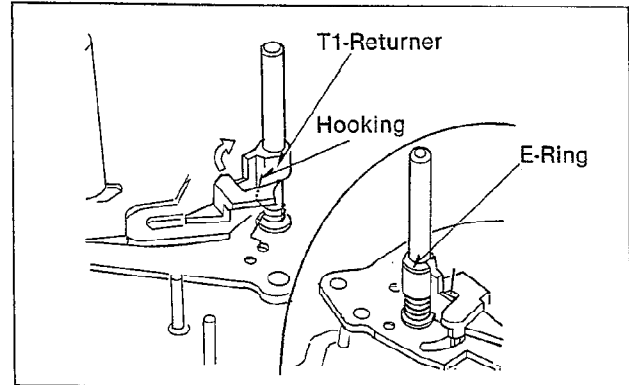


Fig. M23

- (6) Insert the Tape Opener Spring, and then fix the Tape Opener as shown in Fig.M24.

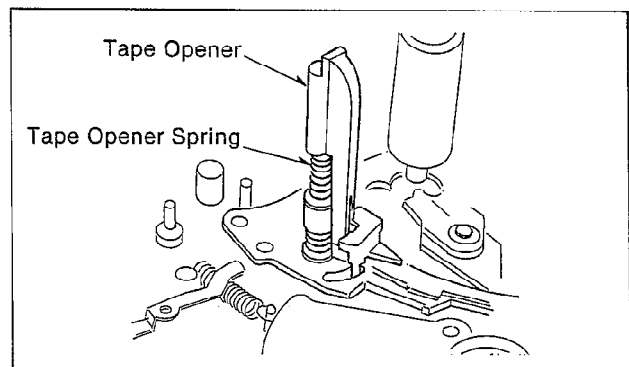


Fig. M24

2-4-8. ASSEMBLY PROCEDURES OF T-LUTCH GEAR AND DRIVE GEAR.

- (1) Turn the Cam Gear to counterclockwise that set the Mechanism to stop position(unloading end) as shown in Fig.M25.

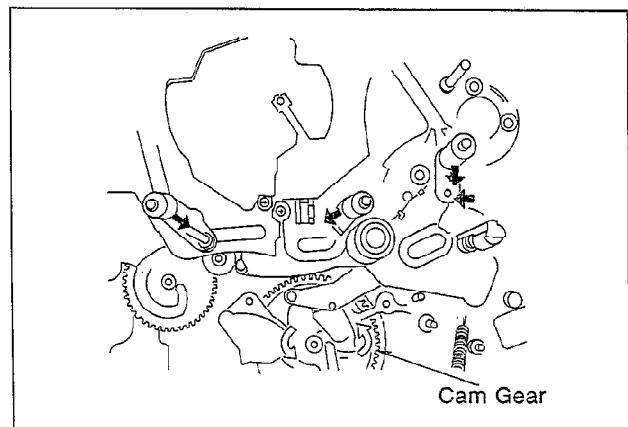


Fig. M25

- (2). Install the T-Clutch gear and then insert the Cut Washer, after that install the Drive Gear D, C and A.

And then insert the Cut Washer to the each Drive Gears as shown in Fig.M26.

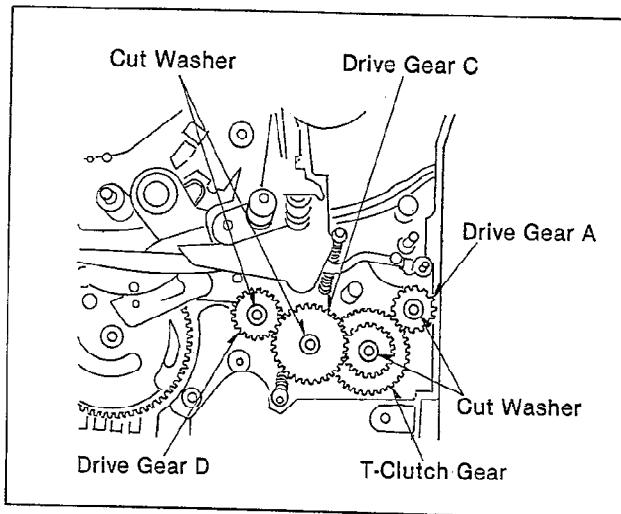


Fig.M26

2-4-9. ASSEMBLY PROCEDURES OF LOADING MOTOR AND LOADING GEAR 2, 3, 4.

- (1). Install the Loading Motor Unit and tighten the 2 Screws as shown in Fig.M27.
- (2). Install the Loading Gear 4 as shown in Fig. M27.
- (3). Insert the washer and then install the Loading Gear 2.
- (4). Insert the washer, then install the loading Gear 3.

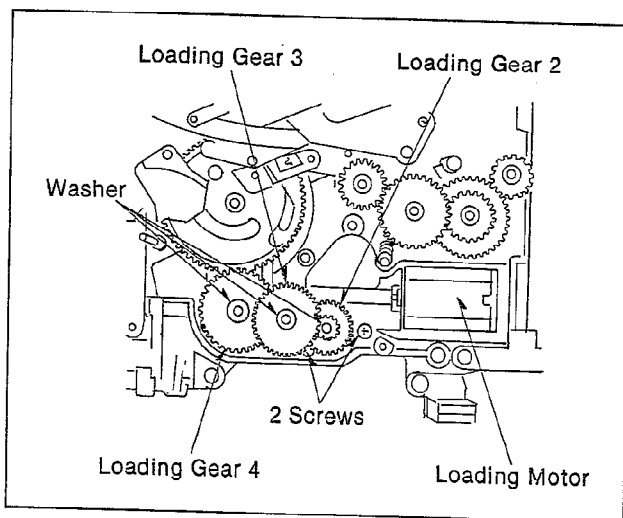


Fig. M27

NOTE :Up side of Loading Gear 4 has rib on inside circle.

2-4-10 ASSEMBLY PROCEDURES OF PULLEY PLATE UNIT AND PULLEY.

- (1). Install the Pulley Plate and then tighten the 2 Screws as shown in Fig.M28.

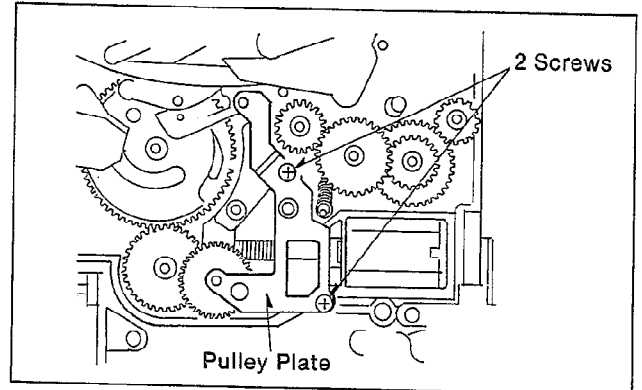


Fig. M28

- (2). Insert the Washer and the pulley from reverse side of chassis, after that install the pulley cap as shown in Fig.M29.

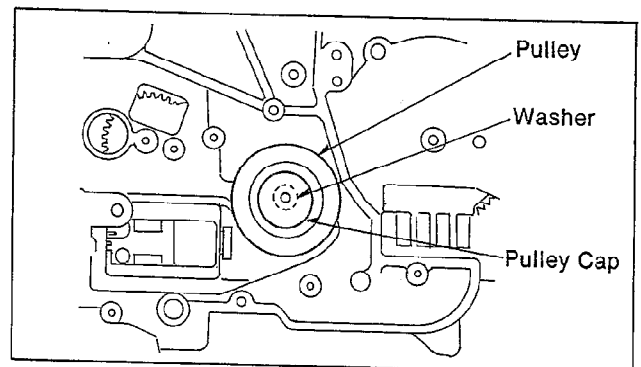


Fig. M29

2-4-11. ASSEMBLY PROCEDURES OF CORRECTOR DRIVE ARM UNIT AND CORRECTOR A, CORRECTOR C.

- (1). Insert the washer to point c and install the Corrector Drive Arm. And then insert the Cut Washer as shown in Fig.M30.

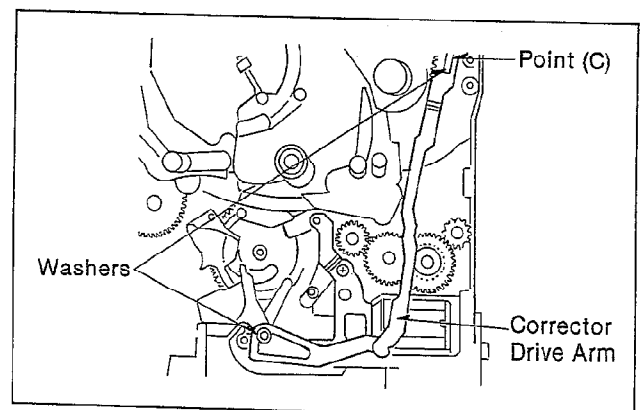


Fig. M30

- (2). Install the Corrector (A) so that the first tip of Corrector Drive Arm comes to first tip of Corrector (A).
After that set a spring in the Corrector (A).
And then insert the Cut Washer to mount it as shown in Fig.M32 and M33.

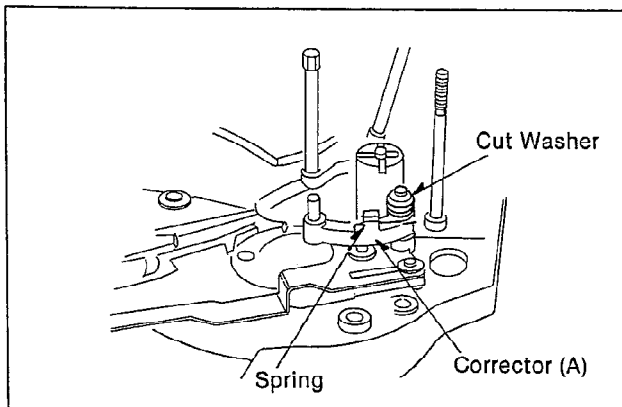


Fig. M31

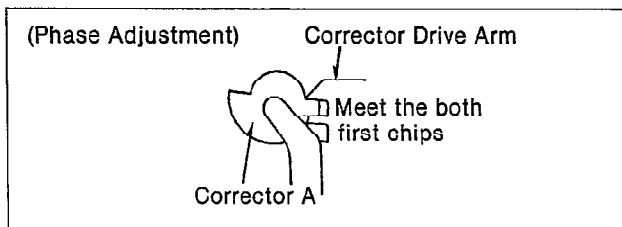


Fig. M32

- (3). Install the Corrector C and the set a Spring in the Corrector C.
After that insert the Cut Washer to mount it as shown in Fig.M33.

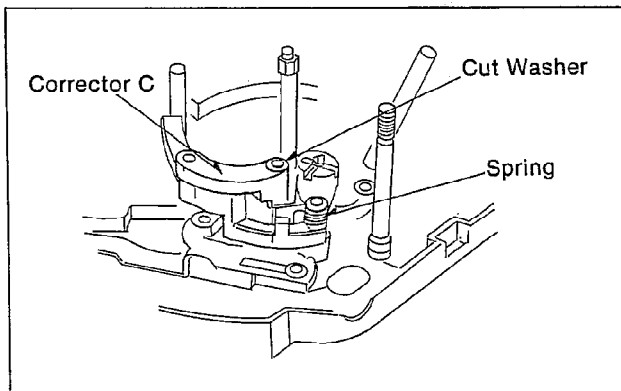


Fig. M33

2-4-12. ASSEMBLY PROCEDURES OF CENTRE GEAR AND T5 ARM

- (1). Insert the Washer and then install the Centre Gear.
After that insert the Cut Washer to mount it as shown in Fig.M34.

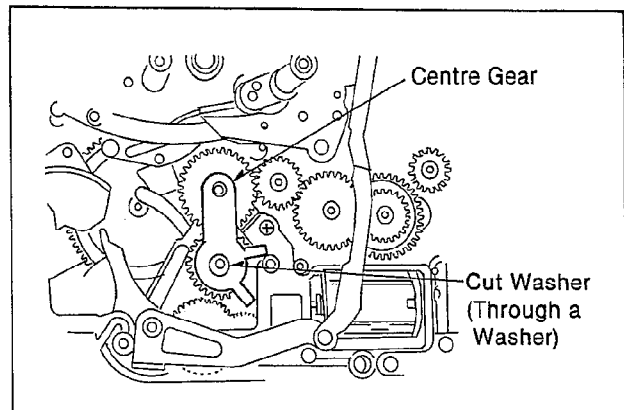


Fig. M34

- (2). Insert the T5 Arm Spring and then install the T5 Arm.
The T5 Arm connect to the Center Gear.
After that insert the E Ring to mount it.

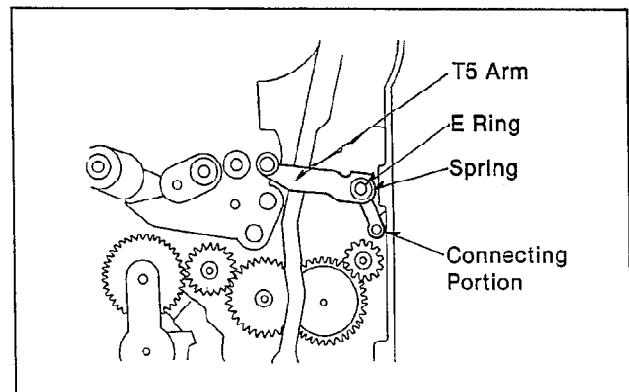


Fig. M35

2-4-13. ASSEMBLY PROCEDURES OF TENSION REGULATOR UNIT AND SUPPLY REEL TABLE.

- (1). Insert the Washer and then install the Tension Regulator Unit so that the Tension Band Arm of Tension Regulator Unit connect to the Loading Gear.
After that insert the Cut Washer as shown in Fig.M36.

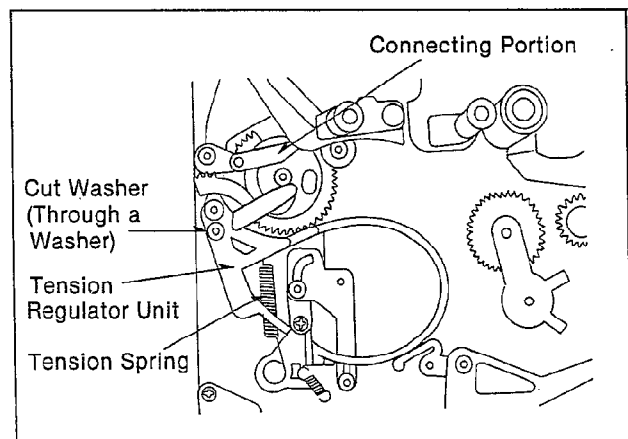


Fig. M36

- (2). Set the Tension Spring in the Lock Base Unit.
- (3). Insert the Washer and then install the Tension Arm so that make sure of phase between the Tension Arm and Tension Band as shown in Fig.M37.
After that insert the Cut Washer to mount it.

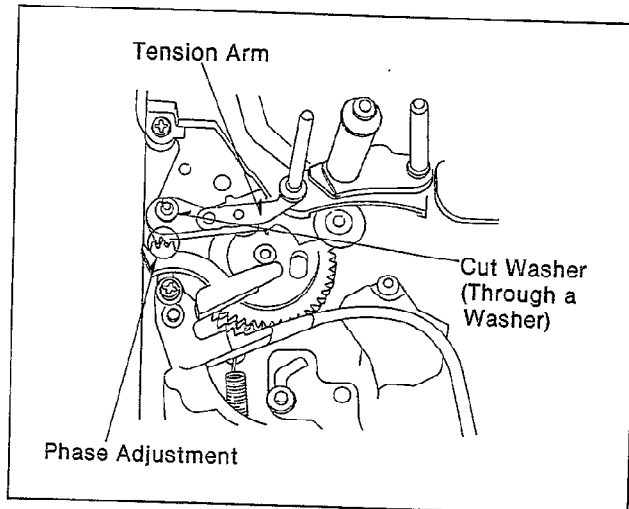


Fig. M37

- (4). Insert the Washer and then install the Supply Reel Table, after that insert the Cut Washer to mount it.

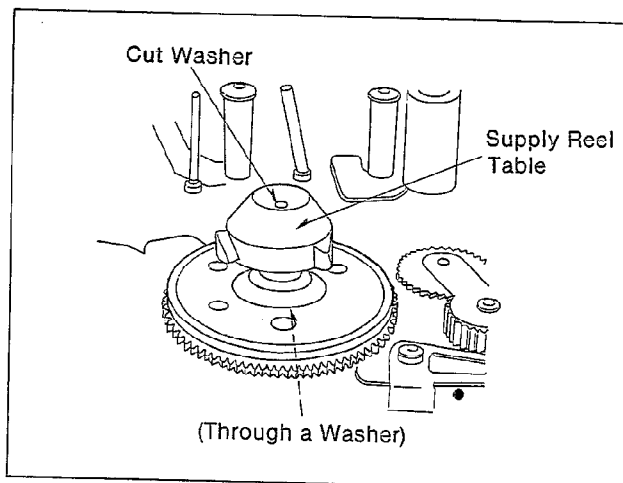


Fig. M38

2-4-14. ASSEMBLY PROCEDURES OF A/C HEAD AND CAPSTAN MOTOR UNIT

- (1). Install the A/C Head Spring and the A/C Head.
- (2). Tighten the hight Adjustment Screw for A/C Head.

NOTE:
Specification of Hight Adjustment of A/C head is as same as interchangeability adjustment.

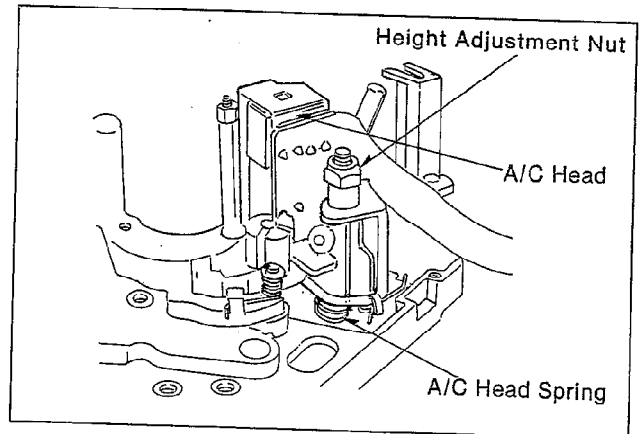


Fig. M39

- (3). Install the Capstan Motor and the tighten the 3 screws as shown Fig.M40.

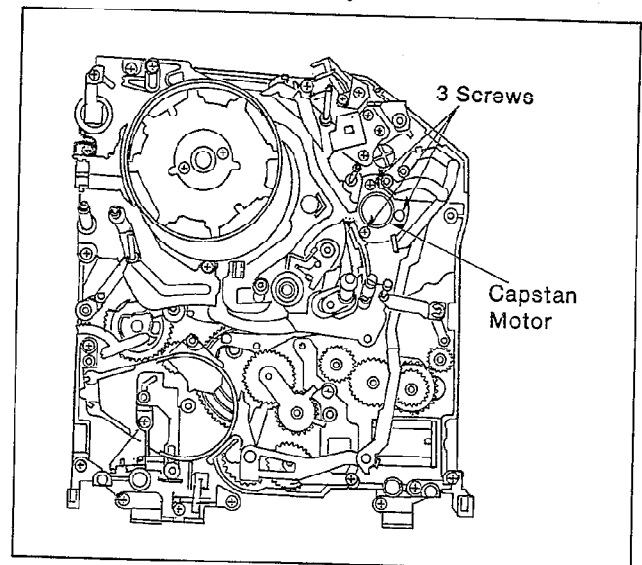


Fig. M40

2-4-15. ASSEMBLY PROCEDURES OF CYLINDER UNIT

- (1). Install the Cylinder unit from the top side, and then tighten the 3-Screws as shown Fig.M41.

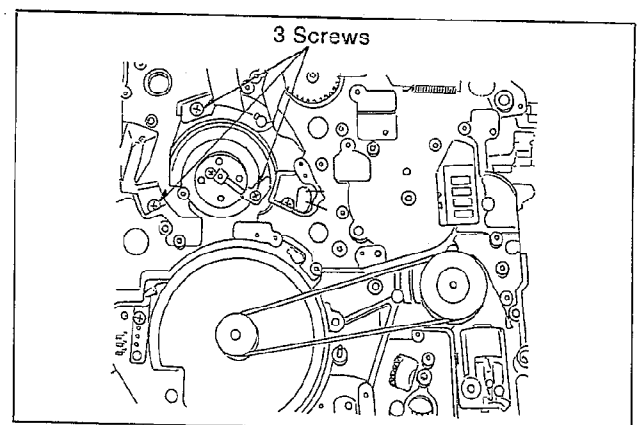


Fig. M41

2-5. INTERCHANGEABILITY ADJUSTMENT

2-5-1. ADJUSTMENT OF BACK TENSION

*Equipment Required.
Tension meter
Alignment tape (VFM8180HUPF)
Specification 17+-2g.

- (1) Remove the Impedance Roller.
- (2) Insert the cassette tape and playback the tape.
- (3) Insert the Tension Meter to Mechanism as shown Fig.T1.

If Back tension is high, spring position change to a.
If Back tension is low, spring position change to c as shown Fig. T2

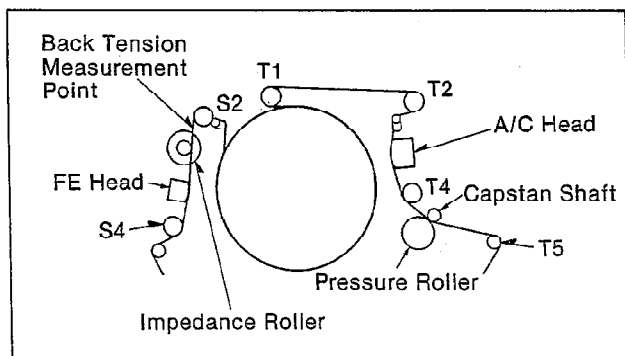


Fig.T1

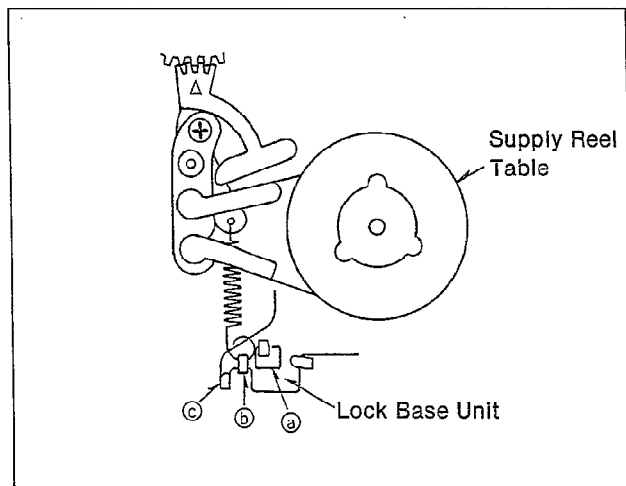


Fig.T2 S-REEL TABLE LOCK.BASE UNIT

- (4) After check the Back tension, install the impedance Roller.

2-5-2. HEIGHT ADJUSTMENT OF TAPE GUIDE POST (PRELIMINARY ADJUSTMENT)

Height adjustment of S4 Post, T4 POST, T5 Post specification.

S4 Post: $17.125 \pm 0.025\text{mm}$

T5 Post: $17.175 \pm 0.025\text{mm}$

T4 Post: $17.175 \pm 0.025\text{mm}$

- (1) For adjustment S4 Post height, turn 4mm Nut (A) Slightly in either direction as necessary to the correct clearance between the upper edge of lower tape guide on S1 Post and lower portion of Mecha chassis Fig. T3 4mm Nut A. upper edge of the Lower tape guide.

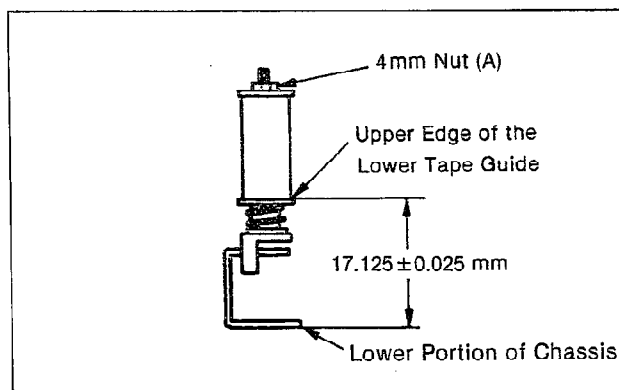


Fig. T3

Confirmation of Tape Travel

- (1) Playback a cassette tape and confirm that the tape travels Without curling at upper and lower guides on posts T4, T2, S4 and S2. Fig. T4.

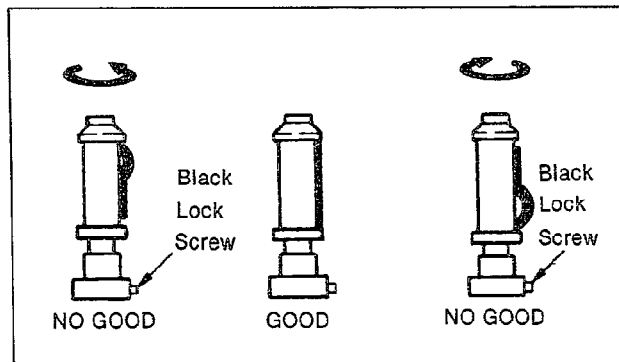


Fig. T4

- (2) If curing is apparent adjust the height of posts by turning the top of post With Hex Wrench.

Note:

Before turning S2 and T1, slightly loosen the Black Lock screw using the Screw driver.

2-5-3. TAPE INTERCHANGEABILITY ADJUSTMENT

NOTE:

- 1) To perform these adjustment/confirmation procedures make sure that the Tracking control is set in fixed position by pushing both of Tracking Control Up/Down Switches at same time.
- 2) Before these adjustment/confirmation procedures, remove the cassette protective tape cover from a cassette tape or the Alignment tape (VFM8180HUPF).

*Equipment Required
Dual Trace Oscilloscope
Alignment tape (VFM8180HUPF)

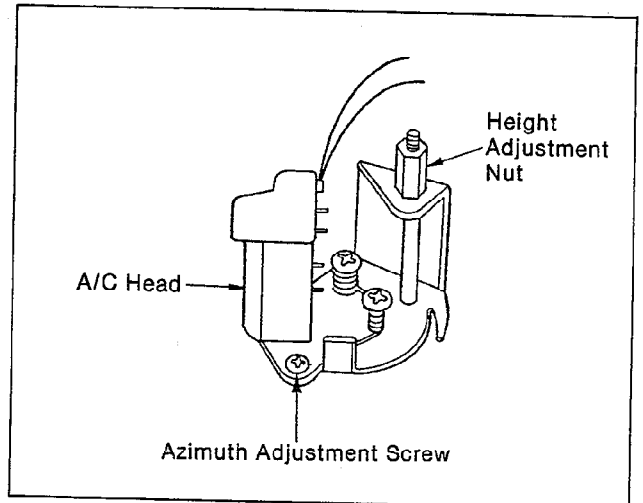


Fig. T6

2-5-4 CONFIRMATION OF TAPE TRAVEL

- (1) Confirmation of A/C Head. This confirmation is required when the A/C Head or capstan Motor is replaced and for preliminary height adjustment.
- (2) Looking at the lower edge of the control Head with the tape in motion, ensure that lower edge of the tape runs 0.25mm above the lower edge of control Head. If it doesn't turn the A/C Head height Adjustment Nut slightly in either direction as necessary to correct it.

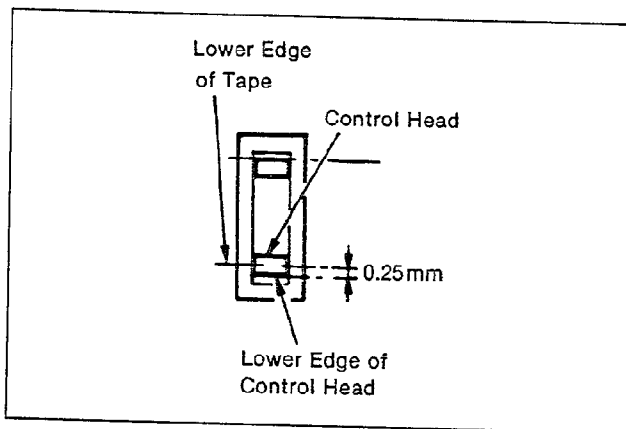


Fig.T5.

2-5-5. AZIMUTH ADJUSTMENT OF A/C HEAD.

- (1) Connect the oscilloscope to Audio Line Output.
- (2) Play back the Monoscope portion (6KHZ, MONO) of the Alignment tape.
- (3) Adjust the Azimuth Adjustment screw on the A/C Head Base in Fig. T6 so that output level is at a maximum.

2-5-6. HORIZONTAL POSITION ADJUSTMENT OF A/C HEAD

- (1) Set the tracking control to the fixed position by pushing both of the tracking control Up/Down switches, in at the same time. Connect the oscilloscope to P5001 pin 23.
- (2) Playback the monoscope portion of the alignment tape and confirm that RF envelope appears as show Fig. T7

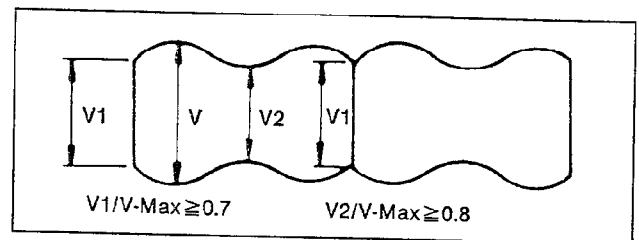


Fig. T7

- (3) If adjustment is required, slowly move the A/C Head Base back and forth using a screwdriver by Turning screwdriver by Turning screw D so that envelope is at a maximum.

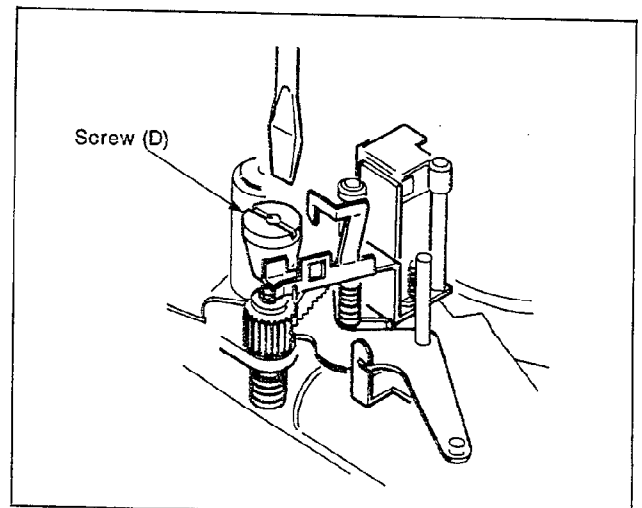


Fig. T8

- (4) Confirmation of the correct adjustment can be made by alternately pushing the Tracking control Up/Down Switches, to check the symmetry of the envelope.
- (5) Reconfirm the symmetry of the envelope. If it has changed, repeat step (B) and (4).

2-5-7. CONFIRMATION/ADJUSTMENT OF ENVELOPE OUTPUT

- (1) Set the tracking control to the fixed position by pushing both of the tracking control Up/Down Switches, connect the Oscilloscope to P5001 PIN23.
- (2) Playback the Monoscope portion of the Alignment Tape and adjust the height of posts S2, T1 posts watching the scope display so that the envelope becomes as flat as possible. ($V1/V-MAX \geq 0.7$, $V2/V-MAX \geq 0.8$)
If adjustment is required, turn top of post with Hex, wrench for adjustment of S2 and T1.

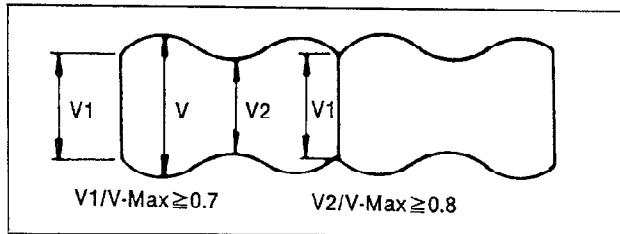


Fig. T9

- (3) When the scope display is shown in Fig. T10 adjust the height of S2 so that the wave looks like Fig. T12.

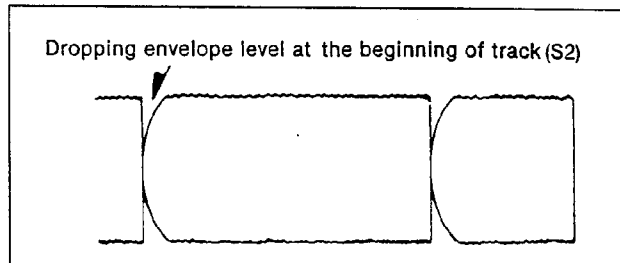


Fig. T10

- (4) When the scope display is shown in Fig. T11, adjust the height of T1 so that the wave form looks like Fig. T12.

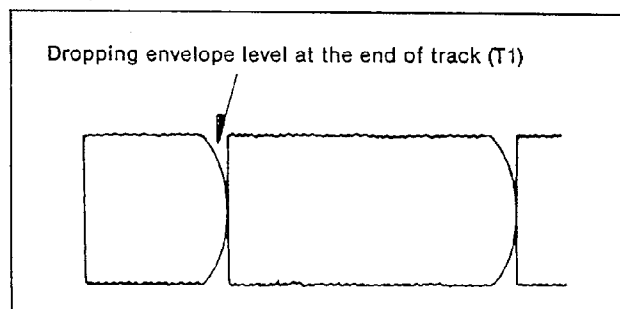


Fig. T11

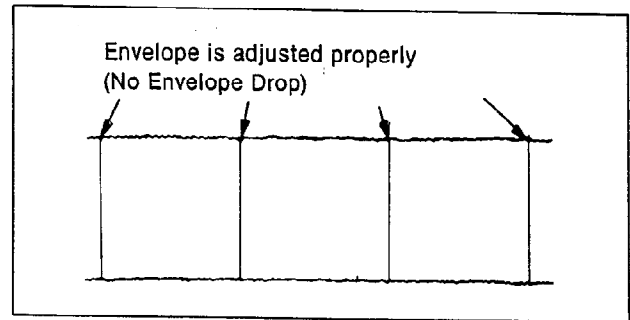


Fig. T12

2-6 ELECTRICAL ADJUSTMENT PROCEDURES

2-6-1. ELECTRICAL ADJUSTMENT FOR CAMERA SECTION

TEST EQUIPMENT AND TOOLS

The following equipment is required for adjustment of the CAMERA section.

1. Oscilloscope
Dual Trace, 50MHz, 2mV/DIV
10 : 1 Probe
1 : 1 Probe
2. Digital Volt Meter or VTVM
3. Frequency Counter
4. Vectorscope
5. Light Meter
6. Tripod
7. Colour Video Monitor
8. Lighting
140 foot-candles (1400lux). on the chart
surface 3200 degrees K.
9. Reflection Chart
 - * Logarithmic Gray Scale chart
(Part No. : YWV2310RB99)
 - * Colour Chip Chart
(Part No. : YWV2100RB98)
 - * Ball Chart
(Part No. : YWV2100RB03)
 - * Hunting Chart
(Part No. : VFK0546)
 - * White Chart (Card)
(Part No. : VFK0546)
 - * J Chart
(Part No. : YWV2100RB3)
 - * B/W Chart
(Part No. : VFK0546)
 - * Gray-White Chart
(Part No. : VFK0546)
 - * Colour Bar Chart
(Part No. : VFKS003B)
10. Plastic Tip Driver
11. E.V.R. FIXTURE (Part No. : VFK0644)

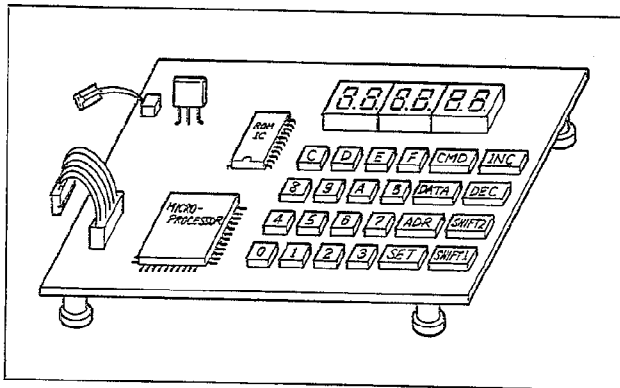


Fig. C1

12. Colour temperature Conversion filter
 - * C12 Filter (Part No.: VFK0374)
 - * C2 Filter (Part No. : VFK0375)
 - * C8 Filter (Part No. : VFK0547)

14. Camera Extension Cables

- * Extension Cable (24P) (Part No. : VFK0624)
 - * Extension Cable (16P) (Part No. : VFK0625)
 - * Extension Cable (14P) (Part No. : VFK0626)
 - * Extension Cable (16P) (Part No. : VFK0622)
- Following Extension Cables can be used for VTR section too.
- * Extension Cable (30P) (Part NO. : VFK0620)
 - * Extension Cable (22P) (Part No. : VFK0621)

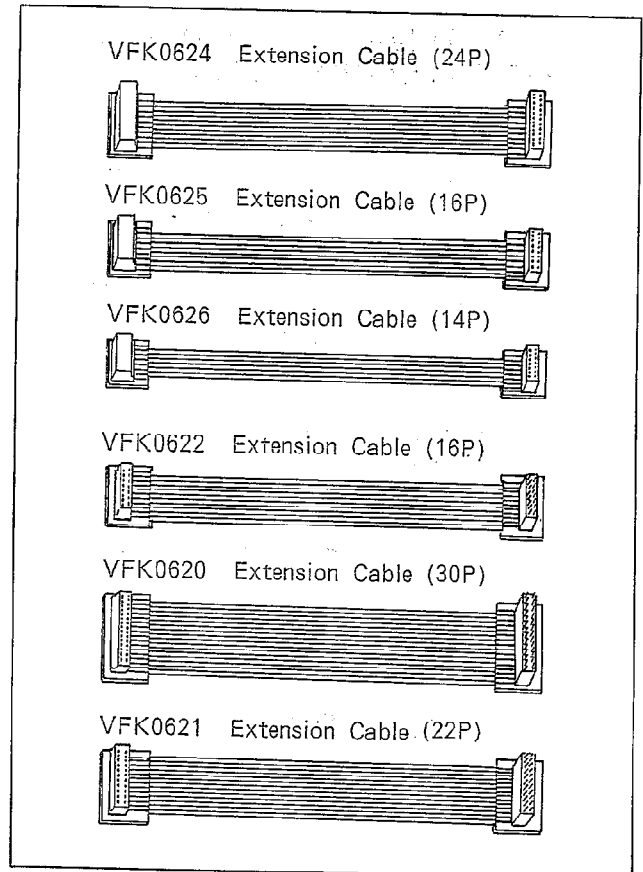


Fig. C2

E.V.R. FIXTURE

Camera Process section employs the remarkable memory IC so called E.E.P.R.O.M (Electric Erasable Programmable Read Only Memory) that fulfills the role of variable resistor in conventional camera process.

In the conventional camera process, each adjustment points were used to be adjusted by turning variable resistors as shown in Fig. C3.

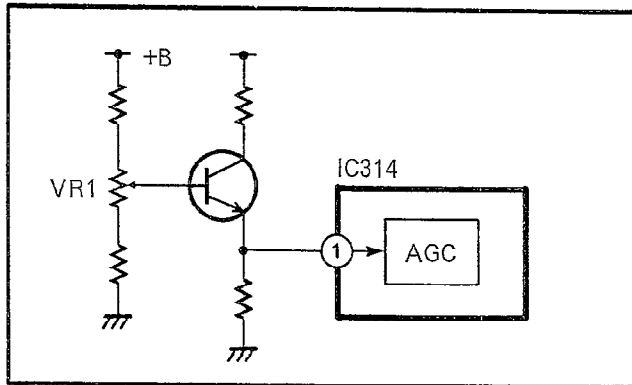
In case of NV-M810, adjustment voltage is memorized in EEPROM as 8 bit digital data.

EEPROM supplies the memorized adjustment voltage to the adjustment point through D/A converter as shown in Fig. C4.

The data in EEPROM can be electrically exchanged freely. E.V.R (Electric Variable Resistor) has been developed to exchange the 8 bit data of EEPROM in process circuit.

(CONVENTIONAL ADJUSTMENT)

CAMERA PROCESS C.B.A.



Control voltage is decided by variable resistor.

Fig. C3

(NEW ADJUSTMENT BY E.V.R)

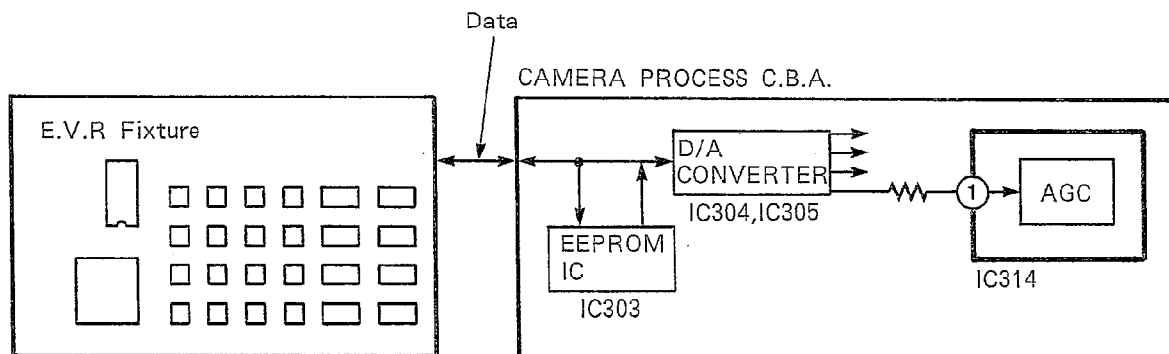


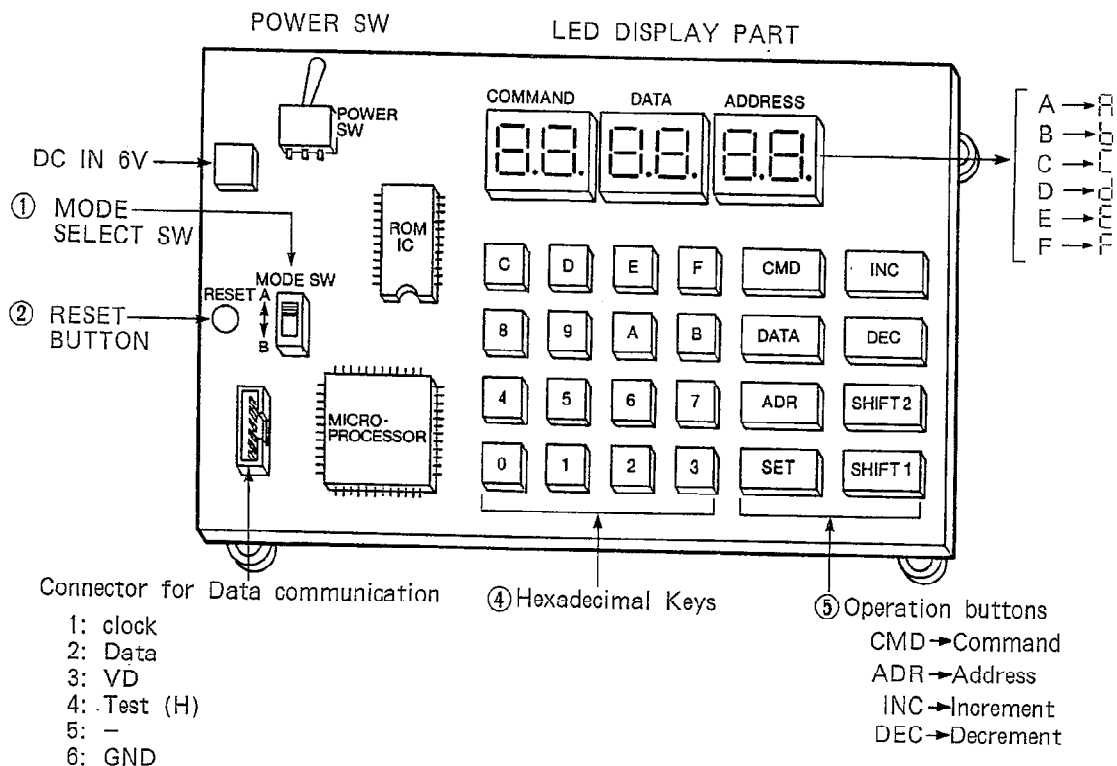
Fig. C4

E.V.R can also communicate with D/A converter directly to change the each control voltage.

Normally EEPROM is having voltage data and is sent to D/A converter where digital data is changed into DC voltage (control voltage).

Using E.V.R. you can change the data stored in EEPROM easily, in other words, you can adjust the camera process section. And E.V.R. can also send the date to D/A converter directly for confirming the adjustment.

Name of Key



NO.	NAME	DESCRIPTION
①	MODE SW	MODEL selection switch. In case of NV-M810, turn it to "A" side
②	RESET BUTTON	After Power is on, if operation is not stable, push this SW.
③	ROM IC	ROM IC of which Programming (to operate E.V.R) is memorized in. In the future, to cope with new camcorder servicing, this ROM IC could be replaced to new version.
④	HEXADECIMAL KEYS	Key buttons of 16 pieces (from "0" to "F"). These are used when "COMMAND", "DATA" or "ADDRESS" is set.
⑤	OPERATION BUTTONS	The buttons to operate writing, reading or setting the data.
	CMD: Command button	This is used to decide the which communication between E.V.R and camcorder (for example, data writing or reading) to perform.
	DATA: Data button	To be used for displaying the data.
	ADR: Address button	To appoint the EEPROM address or D/A converter address.
	SET: Set button	To communicate the data which is displaying with camcorder.
	INC: Increment DEC: Decrement	Increase or decrease the data one by one (+1, -1)
	SHIFT 1 button	To carry out macro operation (while pusing with hexadecimal keys) SHIFT 1 button is used. (Macro operations will be described later)
	SHIFT 2 button	Not used.

Fig. C5

PREPARATION

- 1) Remove both side case (R) and (L) referring disassembly method.
- 2) Connect the E.V.R. FIXTURE and measuring equipments as shown in Fig. C6.

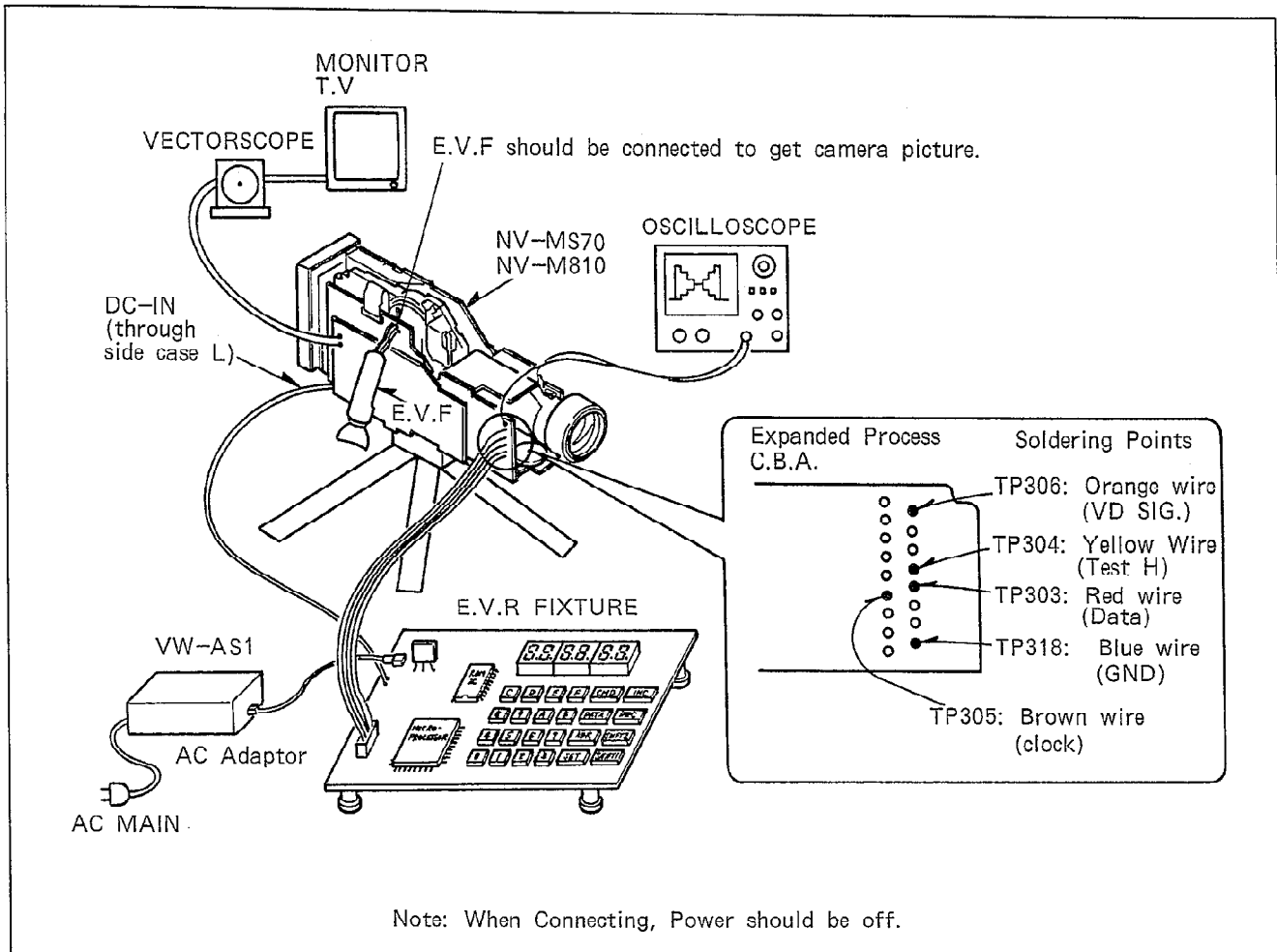


Fig. C6

Initial setting (For getting Picture)

- 1) Select the mode selector on E.V.R. Fixture to "A" side.
(Refer to Fig. C5)
- 2) Turn the power SW of E.V.R. fixture on.
- 3) Turn the power SW of Camcorder NV-M810 on. Then LED Display on E.V.R. Fixture indicates "01 80 00". If display does not indicate this, Push RESET button or confirm the connection cables between EVR and CAMERA.
* In this time, Picture is not appeared on TV monitor but this is normal.
- 4) Push the both buttons of the "SHIFT 1" KEY and "1 KEY" together.
Picture is appeared on TV monitor.
(The data memorized in EEPROM is set into D/A converter)
- 5) In the production of camcorder, all EEPROMs in camcorder are set for "Writing inhibit condition".
As long as this condition is released, camera adjustment can not be performed.
In order to release this condition, Push both buttons of the "SHIFT 1" Key and "7" Key together.
In order to set for "Writing inhibit", Push both buttons of the "SHIFT 1" Key and "6" together.
After adjustment is finished, set EEPROM for "writing inhibit" condition.

(Before Adjusting, How to use the E.V.R. Fixture)

- 1) How to Read out the Date which is being stored in EEPROM.
Connect the E.V.R Fixture as shown in Fig. C6 and perform the "Initial setting" (Pushing "SHIFT 1" key and "1" key together).

Item	Proceduring Order		Buttons to be Pushed	LED Indication
	1	Initial Setting (Refer to Preparation) It is not necessary to do "Initial Setting" at before every Read out. It is enough to do once before starting the adjustment.	SHIFT 1 + 1 Push both buttons together.	0 1 8 0 0 0
For Example, Recording out the data of ALC Adjustment communication from camcorder to E.V.R Fixture Camera → E.V.R	2	Set the Command mode to "04" "04" is read out command. (Refer to command description)	CMD 4 0	LED lights up 04/80 00 Command setting
	3	Set the Address of EEPROM	ADR 0 6	04 4d 06 Address setting LED lights up of EEPROM
	4	Read out the data	SET Push this for 2 seconds	04 4d 06 data for ALC for example

Fig. C7

Result: Adjustment value of ALC has been set for "4D".
It is convenient to read out the data like this (and take memo) before writing the new data next time)
even if something mistake is happened when writing the new data, you can rewrite original data.

2) Writing the New Data.

Note 1: In order to avoid the mis-writing, writing protection data is stored in Address "34" of EEPROM.

This must be released before writing.
Releasing the write protection ; Push the "SHIFT 1" key and "7" key together.

*There is 2 procedures to write the new data

- 1) Write the data after finding the best point (Search and writing procedure)
- 2) Write the data directly (Direct writing Procedure)

(1) Search and write Procedure (For example :ALC Adjustment)

Confirmation: Confirm whether data is written correctly or not.

- Procedure -
1. Set the command to "04"
 2. Set the address to "06"
 3. Push the "SET" button.
 4. The number which is indicated on DATA LED is a data which has been written.

Note 2: In this procedure, E.V.R controls the D/A converter directly (Because data of D/A converter is changed, adjustment voltage is changed) and after finding the best point E.V.R makes D/A converter transfer the data to EEPROM. (Refer to construction system in Fig. C-4). Then, Data is written in EEPROM. Therefore, Address of D/A converter is different from address of EEPROM.
For example, in case of ALC adjustment, address of D/A converter is "21" but address of EEPROM is "06".
At the first, when command "01" is appointed, D/A converter is controlled directly by E.V.R. Then, when "SHIFT 1" and "0" are pushed together, data in D/A converter is written in EEPROM where address is "06" automatically in spite of without appointing the address of EEPROM. (When "SHIFT1" and "0" keys are pushed together, data of D/A converter is automatically transferred in to corresponding EEPROM address and is stored automatically.)

Note 3: If LED display "Err" that means Error, check the write protection (refer to Note

Item	Proceduring Order	Buttons to be Pushed	LED Indication
	1 Initial Setting (Refer to Preparation) It is not necessary to do "Initial Setting" at before every writing the data. It is enough to do once before starting the adjustment.	SHIFT 1 + 1 Push both buttons together	0 1 8 0 0 0
For Example, writing the ALC adjustment data. E.V.R→Camera	2 Set the command to "01".	CMD 0 1	Command for search mode.
	3 Set the Address of D/A converter for "21" E.V.R→D/A (communication from E.V.R to D/A converter))	ADR 2 1	LED lights up 0 1 8 0 0 0
	4 Adjustment Push "DEC" or "INC" button so that Peak to Peak of waveform at TP307 become 300mV±20mV. (use oscilloscope)	Search with INC or DEC	0 1 8 0 2 1 LED lights up
	5 Write in the data after finding the best front.	SHIFT 1 + 0 Push both buttons together.	LED will disappear. 0 1 4 d/2 1 Data "4D" has been stoved Into EEPROM.

Fig. C8

(2) Direct Writing Procedure

Item	Proceduring Order	Buttons to be Pushed	LED Indication
	1 Initial Setting same as (1)	same as (1)	same as (1)
For Example, writing the ALC adjustment data	2 Searching the best Point.	same as (1)	same as (1)
	3 same as (1)		
	4 same as (1)		
	5 Change the command to "02"	CMD 0 2	LED lights up 02/uu 21 Command for Direct writing
	6 Set the address of EEPROM to "06"	ADR 0 6	address of EEPROM 02 uu 06 LED lights up
	7 Set the data of best point "4D"	DATA 4 D	02 4d 06 LED lights up
	8 Write the data	SET Push this for 2sec.	LED disappear. 02 4d 06

Fig. C9

Confirmation: Confirm whether data is written correctly or not.
 Procedure - 1. Set the Command to "04"
 2. Set the Address to "06"
 3. Push the "SET" button
 4. The number which is indicated on DATA LED is a data which has been written.

Writing Protection: Write the data "00" to address "34" of EEPROM so that wrong data is written in by mistake. This procedure is automatically done if "SHIFT 1" and "6" are pushed together with command "01".

(Description of Command)

Selecting the communication for what kind of data exchange is performed between EVR Fixture and camcorder.

Command	Communication	Contents
01	EVR Fixture → D/A converter	Data transmission from EVR to address of D/A converter.
02	EVR Fixture → EEPROM	Writing the data to address of EEPROM.
03	EEPROM → D/A converter	—
04	EEPROM → EVR Fixture	Reading out the data of EEPROM.
05	A/D→EVR Fixture	Data transmission of A/D conversion to EVR.

Fig. C10

(SHIFT1 Command)

The following operations are provided to transfer the data by one touch.

NO.	Buttons to be pushed	Operation
0	SHIFT 1 + 0 Push these together	Writing the Data of D/A converter, which is indicated on LED Display, into corresponded address of EEPROM. Condition: right after carrying out the command with "01"
1	SHIFT 1 + 1	Setting the all data of EEPROM into D/A converter (Initial Setting) Releasing the FADE is also done simultaneously.
2	SHIFT 1 + 2	Making ALC fully open.
3	SHIFT 1 + 3	Making ALC fully close.
4	SHIFT 1 + 4	Making AGC Gain minimize.
5	SHIFT 1 + 5	Making AGC Gain maximize.
6	SHIFT 1 + 6	Writing protection of EEPROM on. (Data writing can not be performed/write inhibit)
7	SHIFT 1 + 7	Releasing the writing protection. (Data writing can be performed)
8	SHIFT 1 + 8	Releasing the HC (High Cut).
9	SHIFT 1 + 9	Zoom comes to "TELE" position.
A	SHIFT 1 + A	Zoom comes to "WIDE" position.
B	SHIFT 1 + B	Focus becomes "Manual Focus".
C	SHIFT 1 + C	Focus becomes "Auto Focus".
D	SHIFT 1 + D	FADE ON
E	SHIFT 1 + E	FADE OFF

Fig. C11

Note: If you want to stop the zoom in between TELE and WIDE, you can control it by using "SHIFT1"+"9" or "SHIFT1"+"A" alternately. For example, when zoom motor is moving to TELE side if you push "SHIFT1" and "A" keys together, zoom motor is stopped. SHIFT1 key is only effective when command is

(Error Indication)

If something error is happening while EVR is working, EVR indicates the error message which are mentioned in Fig.C11-1 for 2 seconds and then return to previous indication.

Error NO.	Contents of Error	Simple checking method
0	Command of except "01"~"06" is set	
1	VD signal from camera is not coming.	lead wire of TP may be cut out
2	Communication with camera is not synchronized.	lead wire of TP may be cut out
3	Writing error in the EEPROM of camera.	Check with command "01" and. SHIFT 1 + 7 (Releasing the writing Protection)

Fig. C11-1

(Other functions which can be controled by E.V.R.)

Camera operation can be controlled by EVR even during adjustment.

For example, in case of high speed shutter 1/250sec.

Set the command "06", Data "20" and D/A address "40".

Then push "SET" button, camera becomes 1/250 sec. shutter speed.

- 1) Push "CMD" button then push "0" and "6" buttons.
- 2) Push "DATA" button then push "2" and "0" buttons.
- 3) Push "ADR" button then push "4" and "0" buttons.
- 4) Push "SET" button. camera becomes 1/250sec. shutter speed.

As the same way, following operation can be done.

Shutter Speed Key In	Normal	1/250sec.	1/500sec.	1/1000sec.	FADE ON	FADE OFF
CMD	06	06	06	06	01	01
DATA	00	20	40	60	00	FF
ADR	40	40	40	40	29	29

Fig. C11-2

(Hexadecimal—Decimal Conversion Table)

For some of adjustment items, calculation of hexadecimal data (indicated on LED of EVR Fixture) is needed to obtain the adjustment data.

In these cases, convert the hexadecimal value to decimal value before calculation and after calculation is finished, reconvert the result to hexadecimal to obtain the adjustment data. Thus, write the adjustment data into EEPROM.

A hexadecimal - Decimal conversion table is shown in Fig. C12.

Hexadecimal lower digit	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Hexadecimal upper digit	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
B	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

For example: If Indication of EVR is "A8" (as upper digit is "A" and lower digit is "8"), a decimal value of "168" is obtained from the intersection of ① and ② in the above table.

Fig. C12 Hexadecimal—Decimal Conversion Table

(Adjustment Items required after replacing the individual components.)

When following parts are replaced, check the following adjustment items and adjust these if necessary.

NO.	Replaced Parts	Adjustment point or check points which are required			
		ALL ADJ. Points	Colour Reproduction	Focus & Zoom Encoder	Other ADJ.
1	IC303 (ROM), IC304 (D/A)	○			
2	IC204 (CCD) individual		○	○	
3	Process C.B.A	○			
4	Sensor C.B.A without CCD		○	○	
5	A.F C.B.A			○	ALC, Pedestal
6	Zoom Encoder			○	
7	Focus Encoder			△	Focus Encoder
8	Lens Unit			○	
9	IC703			△	
10	IC317		○		HC, carrier Balance
11	IC711			○	ALC, Pedestal

○ mark Adjustment may be required.
 △ mark Confirm adjustment necessity and adjust it, if necessary.
 Colour Reproduction.....WB, Colour gain, colour phase adjustments.

Fig. C13

(Standard Setting for Camera Adjustment)

Unless specified, switches are set to following positions.

- 1) White Balance Switch ... Indoor
- AF ... Auto
- High speed shutter ... OFF
- Fade ... OFF

These are set automatically after performing the "Initial setting" with EVR.

- 2) Iris ... Center
(ALC condition)
- 3) Mode Selector ... Manual
- 4) Use 3200 degrees kelvin light source for lighting.
- 5) For trigger the oscilloscope, use video output.
- 6) Service work for camera unit must be performed in a dust free location to maintain the lens cleanliness.

HOW TO READ THE ADJUSTMENT
PROCEDURES
(FOR USE OF CONVENTIONAL VR)

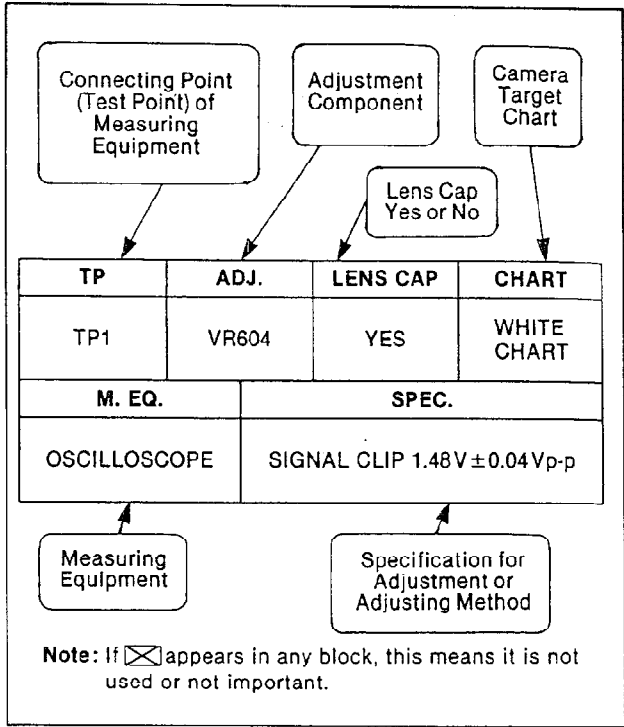
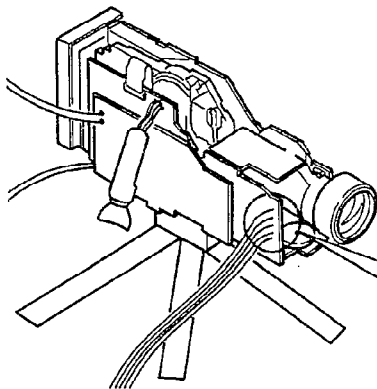
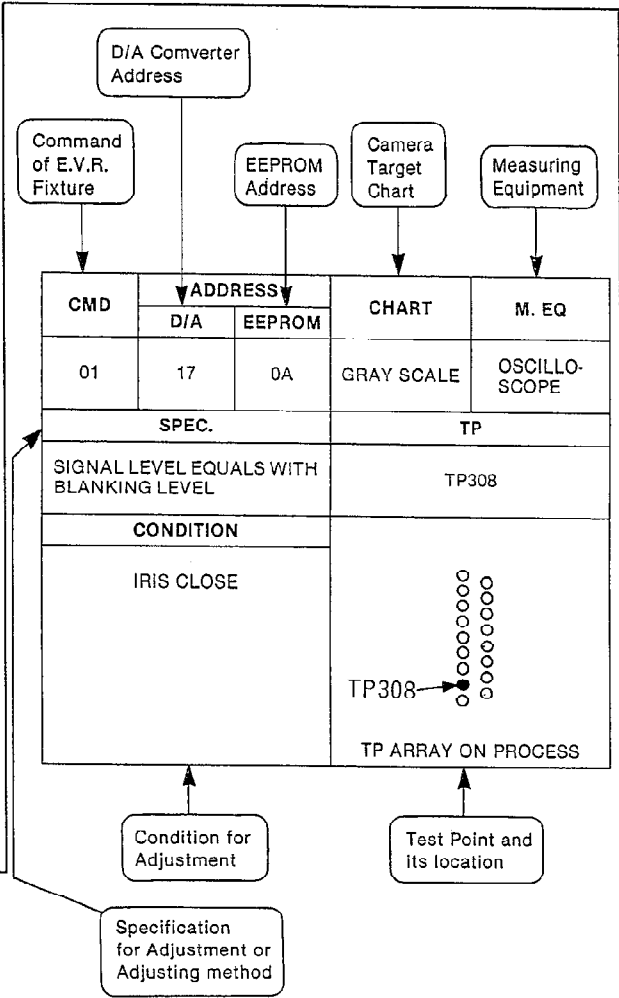


Fig. C14

HOW TO READ THE ADJUSTMENT PROCEDURES
(FOR USE OF E.V.R.)



Test Point Array on Process C.B.A.

TP307	○		TP306
TP319	○	○	TP312
TP310	○	○	TP311
TP313	○	○	TP304
TP302	○	○	TP303
TP305	○	○	TP315
TP309	○	○	TP301
TP308	○	○	TP318
TP317	○	○	

Regarding connections of EVR and measuring Equipment, refer to Preparation Fig. C6.

Fig. C14-1

1. PLL FREQUENCY ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
PIN 22 OF B201	C292		
M. EQ.		SPEC.	
FREQUENCY COUNTER		12.713285MHz + - 150Hz	

Note:

B201, C272 : Sensor C.B.A.

2. V-SUB ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
	VR201	NO	HALOGEN LAMP
M. EQ.		SPEC.	
MONITOR TV		NO BLOOMING	

- (1) Zoom all the way in (Fully tele position) and aim the camera at the Halogen Lamp as shown in Fig. C14-2.

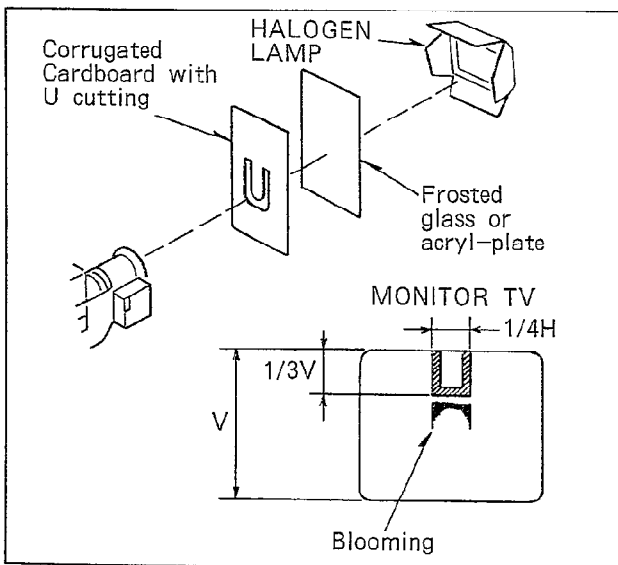


Fig. C14-2

- (2) Set the High Speed Shutter SW to "OFF" portion.
- (3) Blind the lighting using frosted glass or acryl plate to diffuse incoming light. And also put a corrugated cardboard which inside is cut to "U" shape as shown in Fig. C14-2.
- (4) Adjust VR201 so that blooming is just disappear. (If blooming is not disappeared completely, adjust until minimum blooming)
- (5) High Speed Shutter "ON" and "OFF" both mode, confirm that the monitored picture does not contain the Blooming even if the camera moves as shown in Fig. C14-3.

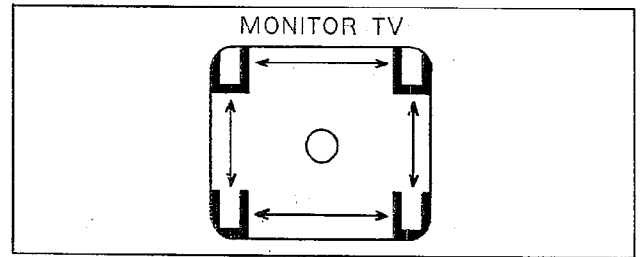


Fig. C14-3

3. FOCUS ENCODER ADJUSTMENT

Note 1: Before performing this adjustment, check the "Back Focus."
If Back Focus is not correct, adjust this Focus Encoder adjustment.
(Refer to Note 2) Unless there is back focus problem, do not touch this focus encoder. This adjustment is very critical.

- (1) Set the Focus switch to "MANUAL"
- (2) Check the back focus. (Refer to Note 2)
If it is correct, there is no need to adjust this.
- (3) If back focus is not correct.
Take the Pin 28 of IC703 out. (make open circuit)
Connect the jumper wire between the base of Q707 and IC703-84 (5V).
- (4) Set the zoom position to fully TELE side.
Focus the lens with far object (more than 10m)
- (5) Loose the screw (A).
Move the Focus Encoder C.B.A. so that voltage of centre of connector (B) becomes 2.4V+-0.5V.
Then, tighten the screw(A).

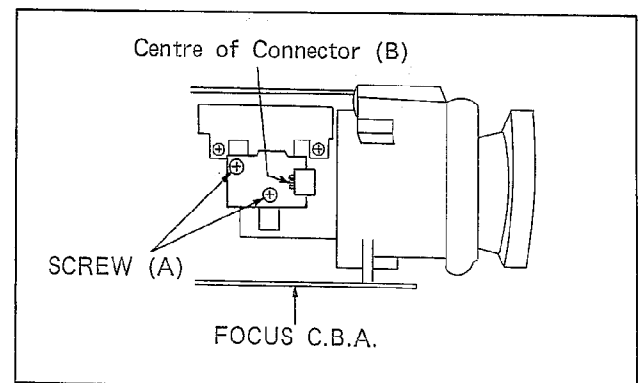
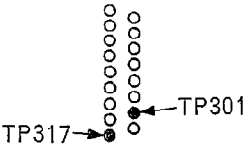


Fig. C15

Note 2: Confirmation of back focus.

- A) Set the Focus switch to "MANUAL".
- B) Set the zoom to fully TELE position.
- C) Focus the lens with far object (more than 10m).
- D) Move the zoom to WIDE position.
Check the focus condition at wide position and on the way to WIDE position.
- E) If focus is not correct, adjust the Focus ENCODER adjustment.

4. ZOOM ENCODER ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	T: 25 W: 26	T: 0F W: 10	Far object: 10m Near object: 1m	DIGITAL VOLTMETER
SPEC.			TP	
To be calculated.			TP317, TP301	
CONDITION				
• Focus Encoder ADJ. Should be completed.				
			TP ARRAY ON PROCESS	

Note:

- 1) Unless you replaced zoom Encoder, 3rd lens (1) unit or 4th moving frame (1) unit, do not perform this adjustment. (Because this adjustment is critical)
- 2) Regarding the connection of EVR, refer to preparation. (Fig. C6)

(Simplified adjustment)

- (1) Set the Focus sw to "MANUAL".
- (2) Check the back Focus. (Refer to Note 2 of Focus Encoder Adjustment)
- (3) If back focus is not correct, proceed to (4). If back focus is correct, skip this adjustment.
- (4) Connect the EVR to camcorder (Refer to Preparation Fig. C6).
- (5) Perform the initial setting by pushing "SHIFT 1" key and "1" key together.
- (6) Read the data of Tele side and wide side in EEPROM as follows;
 - * Push "CMD" button and then push "0" and "4" (Setting command 04).
 - * Push "ADR" button and then push "0" and "F". (Setting Address 0F)
 - * Push "SET" button and take memo of number which is indicated on LED Display (as TELE side data)
 - * As the same way, set the command "04".
 - * Set the address "10".
 - * Push the "SET" button and memo the number which is indicated on LED Display (as wide side data)
- (7) Set the command (CMD) to "01".
- (8) Set the address (ADR) to "25" for TELE.
- (9) Push "INC" or "DEC" once to increase or decrease the data for one step.
- (10) Confirm the back focus.
Repeat (8) and (9) until back focus becomes
- (11) When back focus becomes best, write the data by pushing "SHIFT 1" and "0" together.
- (12) Set the address (ADR) to "26" for WIDE.
- (13) Push "INC" or "DEC" once to increase or decrease the data for one step.
- (14) Confirm the back focus.
Repeat (13) and (14) until back focus becomes best.
- (15) When back focus becomes best, write the data by pushing "SHIFT 1" and "0" together.

(Precise Adjustment for Zoom Encoder)

According to number which is mentioned on flexible cable of lens unit, calculate the voltage to be supplied the both side of zoom Encoder. And write the its result into EEPROM as follows:

<Pre-Adjustment>

- (1) Calculate the V.REF(+), V.REF(-) using the following formula.

$$\text{TELE side} \\ V.REF(+) = V.REF3 + (V.REF3 - V.REF1) \times (5 - VT) / (VT - VW)$$

$$\text{WIDE side} \\ V.REF(-) = V.REF1 - (V.REF3 - V.REF1) \times VW / (VT - VW)$$

V.REF3 = Voltage at TP317 (Please measure it)

V.REF1 = Voltage at TP301 (Please measure it)

VT = which is mentioned on flexible cable of top portion of lens unit. (Bigger number)

VW = which is mentioned on flexible cable of top portion of lens unit. (Smaller number)

VA = Centre voltage of three test round (ZENC) at zoom wide position. (refer to Fig. C16)

VB = Centre voltage of three test round (ZENC) at zoom TELE position.

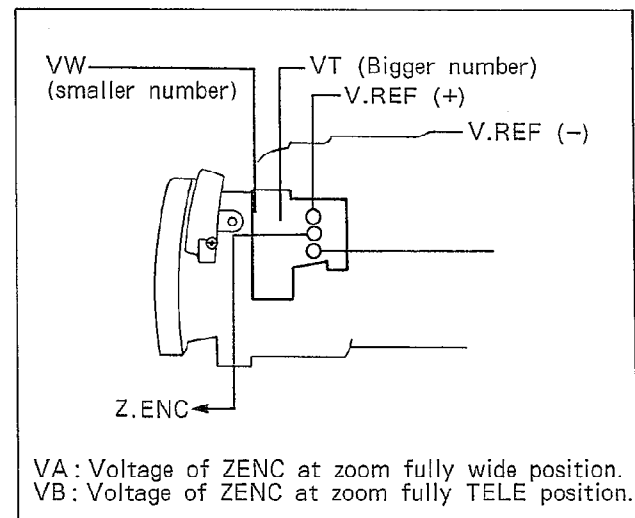


Fig. C16

- (2) Take memo the above result of calculation
- (3) Set the zoom to fully TELE position
- (4) Connect the probe of volt meter to V.REF (+) (see Fig. C16) and measure the voltage.
- (5) Using E.V.R, change the data of D/A address to "25" with command "01" so that voltage at V.REF (+) become same as a result of calculation as follows :
 - * Push "CMD", "0" and "1" keys.
 - * Push "ADR", "2" and "5" keys.
 - * Measure the voltage at V.REF (+) (see Fig. C16)
 - * Push "INC" or "DEC" so that voltage at V.REF (+) become same as a result of calculation.
 - * Write the data by pushing "SHIFT 1" and "0" keys together.

- (6) As the same way, set the zoom to fully WIDE position.
- (7) Measure the voltage at V.REF (-) (See Fig. C16).
- (8) Change the D/A address to "26" (with command "01") and increase or decrease the data by pushing "INC" or "DEC" so that voltage at V.REF (-) become same as a result of calculation. Then, push "SHIFT 1" and "0" keys together to write the data. :

<Fine Adjustment>

- (1) Calculate the following formula with measuring the each voltage. (Refer to Fig. C16) and take note the result.
 - * TELE Side

$$V.REF(+) = VB + (VB - (VA - 0.024)) \times (5 - VT) / (VT - VW)$$
 - * WIDE side

$$V.REF(-) = V.REF1 - (V.REF3 - V.REF1) \times VW / (VT - VW)$$
- (2) Set the zoom to fully TELE position.
- (3) While measuring the voltage at ZENC (see Fig. C16), Change the data of D/A address "25" with command "01" so that voltage at ZENC become same as a result of calculation and when ZENC voltage comes same as result of calculation ,write its data by pushing "SHIFT 1" and "0" keys together.
 - * Push "CMD", "0" and "1" keys.
 - * Push "ADR", "2" and "5" keys.
 - * Measure the voltage at ZENC (see. Fig. C16)
 - * Push "INC" or "DEC" so that voltage at ZENC become same as a result of calculation.
 - * Push "SHIFT 1" and "0" keys together to write the data.
- (4) Set the zoom to fully wide position.
- (5) While measuring the voltage at ZENC (see Fig. C16), change the data of D/A address "26" with command "01" so that voltage at ZENC become same as a result of calculation and write its data by pushing "SHIFT 1" and "0" keys together.
 The procedure is same as (3), only address is "26".

Note:

If VW and VT is not mentioned after replacing lens unit, use data $VW=0.371V$ and $VT=4.591V$. This value is rough value, so if those number are used, after you do this adjustment, confirm the back focus, and if back focus is not correct, perform simplified adjustment. With address "25" and "26", change data one by one until back focus become correct.

5. VTR PEDESTAL (R-Y), (B-Y) ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	P-Y: 2C B-Y: 2B	0D 0E		OSCILLOSCOPE or VECTORSCOPE
SPEC.			TP	
WAVEFORM IS MINIMIZED			VIDEO OUT	
CONDITION				
Fade: ON				

Note:

Refer to preparation for connection of EVR.

- (1) Connect the Video output to vectorscope.(or oscilloscope)
- (2) Place the unit to "FADE" by pushing "SHIFT 1" and "D" keys together.
- (3) Push "CMD", "0" and "1" keys.
- (4) Push "ADR", "2" and "C" keys.
- (5) Push "INC" or "DEC" so that waveform become minimized as shown in Fig. C17.
 or so that vector comes to centre as shown in Fig. C18.

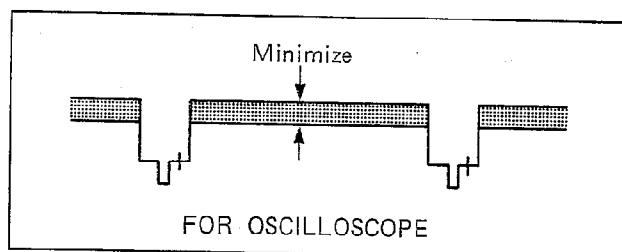


Fig. C17

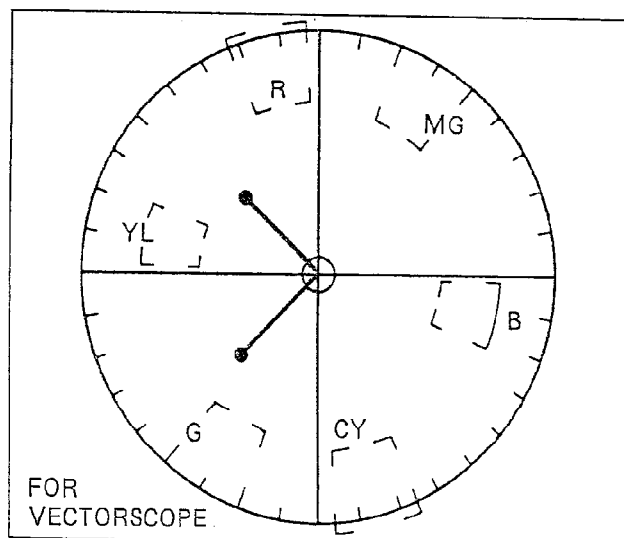
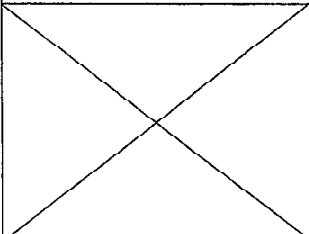


Fig. C18

- (6) Push "SHIFT 1" and "0" keys together to write its data.
- (7) Change "ADR" to "2B" (with command "01")
- (8) Push "INC" or "DEC" so that waveform is minimized.(or Vector comes to centre)
- (9) Push "SHIFT 1" and "0" keys together to write its data.

6. ϕR BIAS ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	14	07	J CHART	OSCILLOSCOPE
SPEC.			TP	
WAVEFORM is MAXIMIZED			TP314	
CONDITION			REFER TO BELOW	
				

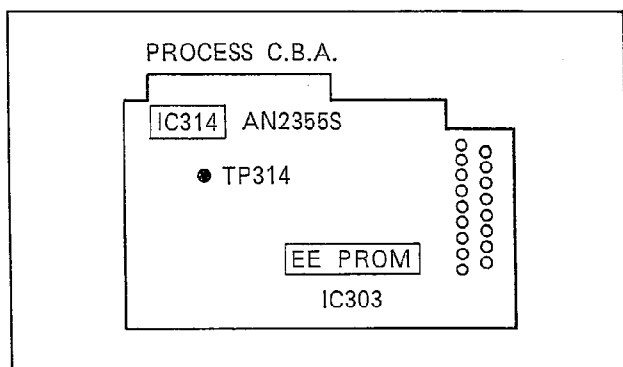


Fig. C19 LOCATION OF TP314

Note:

Regarding connection of EVR, refer to preparation (Fig. C6) and Initial setting.

1. Aim the camera at J chart.
2. Connect the oscilloscope to TP314.
3. Push "CMD", "0" and "1" keys of EVR.
4. Push "ADR", "1" and "4" keys.
5. Push "INC" or "DEC" KG/so that waveform is maximized as shown in Fig. C20.
6. Push "SHIFT 1" and "0" keys together to write its data.

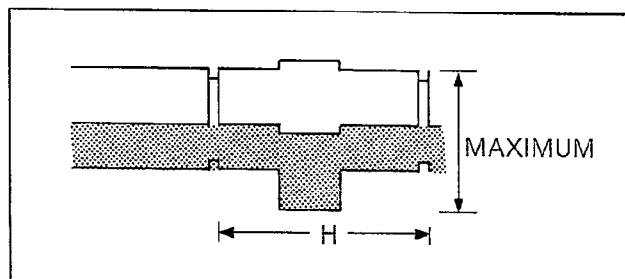


Fig. C20

7. CDS GAIN ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	15	08	J CHART	OSCILLOSCOPE
SPEC.			TP	
200 + - 10 mV			TP314	
CONDITION			LOCATION is SAME AS ϕR BIAS ADJUSTMENT	
ALC ADJUSTMENT SHOULD BE 300 + - 10 mV				

Note:

Regarding connection of EVR, refer to preparation (Fig. C6) and Initial setting.

1. Set the ALC adjustment so that waveform is 300+/-20mV at TP307 (Refer to ALC ADJUSTMENT).
2. Aim the camera to J chart.
3. Push "CMD", "0" and "1" keys of EVR.
4. Push "ADR", "1" and "5" keys.
5. Connect the oscilloscope to TP314.
6. Push "INC" or "DEC" key so that waveform is 200+/-10mV.
7. Push "SHIFT 1" and "0" keys together to write its adjusted data in EEPROM.

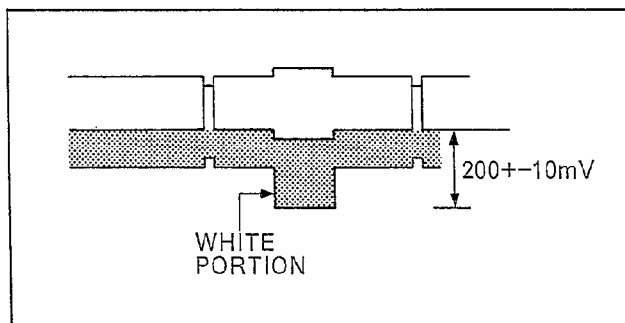
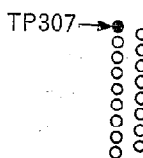
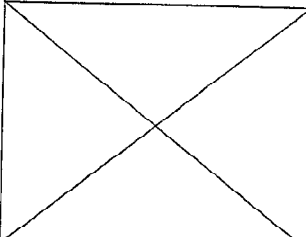


Fig. C21

8. ALC ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	21	06	GRAY SCALE CHART	OSCILLO- SCOPE
SPEC.			TP	
300+ -20mV			TP307	
CONDITION			 TP307 →	
				
TP ARRAY ON PROCESS				

Note:

Regarding connection of EVR, refer to preparation (Fig. C6) and Initial setting.

1. Aim the camera at Gray scale chart.
2. Connect the oscilloscope to TP307.
3. Push "CMD" key, "0" key and "1" key of EVR.
4. Push "ADR" key, "2" key and "1" key.
5. Push "INC" key or "DEC" key so that waveform becomes 300+ -20mV.
6. Push "SHIFT 1" key and "0" key together to write its adjusted data into EEPROM.

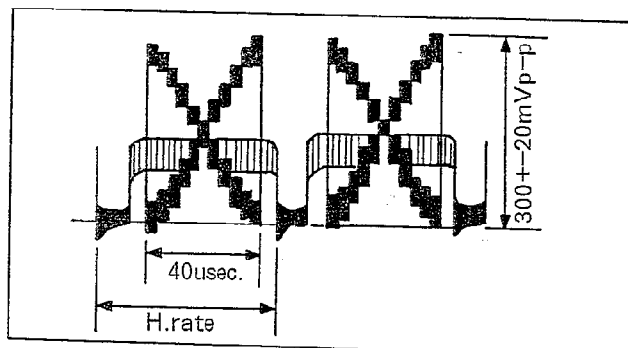
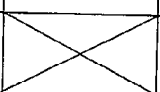
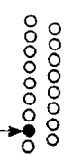


Fig. C22

9. PEDESTAL ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	17	0A		OSCILLOSCOPE
SPEC.			TP	
BLK LEVEL±5mV			TP308	
CONDITION			 TP308→	
IRIS CLOSE OR LENS CAP				
TP ARRAY ON PROCESS				

Note:

Regarding the connection of EVR, refer to preparation (Fig. C6) and Initial setting.

1. Cover the lens with LENS CAP or close the IRIS. (by pushing "SHIFT 1" + "3" together)
2. Connect the oscilloscope to TP308.
3. Push "CMD" key, "0" key and "1" key of EVR.
4. Push "ADR" key, "1" key and "7" key.
5. Push "INC" key or "DEC" key so that waveform becomes BLK level ±5mV.
6. Push "SHIFT 1" key and "0" key together to write its adjusted data.

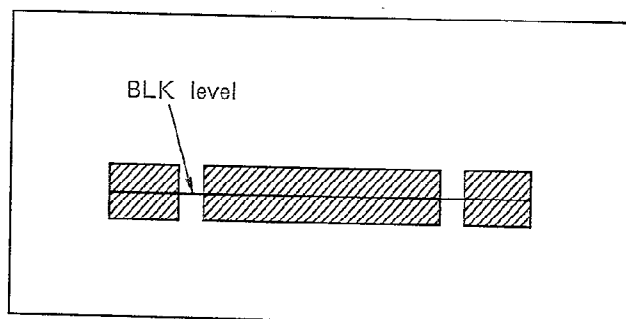
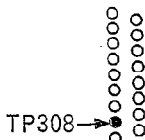
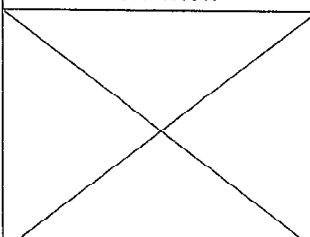


Fig. C23

10. AGC ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	16	09	GRAY SCALE CHART	OSCILLO- SCOPE
SPEC.			TP	
V/S=2.33+ -0.15			TP308	
CONDITION			 TP ARRAY ON PROCESS	
				

Note:

- Regarding the connection of EVR, refer to Preparation (Fig. C6) and Initial setting.
1. Aim the camera at Gray scale chart.
 2. Connect the oscilloscope to TP308.
 3. Push the "CMD" key, "0" key and "1" key of EVR.
 4. Push the "ADR" key, "1" key and "6" key.
 5. Push the "INC" key or "DEC" key so that ratio of V and S becomes 2.33 ± -0.15 as shown in Fig. C24.
 6. Push the "SHIFT 1" key and "0" key together to write its adjusted data in.

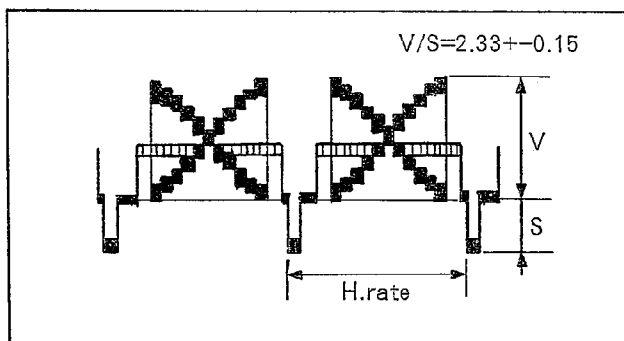
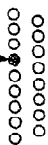


Fig. C24

11. HC CARRIER BALANCE ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	02 (R-Y) 18 (B-Y)	01 (R-Y) 0B (B-Y)	BLACK and WHITE CHART	OSCILLO- SCOPE
SPEC.			TP	
BLK LEVEL BECOMES EQUAL TO HC LEVEL			TP313	
CONDITION				
ALC: 400mV HC: ON				
			TP ARRAY ON PROCESS	

Note:

Regarding the connection of EVR, refer to preparation (Fig. C6) and Initial setting.

1. Readjust the ALC adjustment so that waveform becomes 400mV. But do not write the data into EEPROM (Do not perform item 6 of ALC Adjustment) (Refer to ALC Adjustment)
2. Take the HC on by pushing the "SHIFT 1" key and "8" key together.
3. Aim the camera at Black and White chart and Connect the oscilloscope to TP313.
4. Push the "CMD" key, "0" key and "1" key.
5. Push the "ADR" key, "0" key and "2" key.
6. Push the "INC" or "DEC" so that BLK level approaches to HC level as much as possible.
7. When best point comes, Push the "SHIFT 1" key and "0" key together.
8. Change the "ADR" to "18" by pushing "ADR" key, "1" key and "8" key.
9. Push the "INC" key or "DEC" key so that BLK level approaches to HC level as much as possible.
10. When best point comes, Push the "SHIFT 1" key and "0" key together.
11. Repeat 3 to 9 until BLK level becomes equal to HC level.
12. Return the ALC to 300mV. Push the "SHIFT 1" key and "1" key together, ALC will return to original level (300mV) if you did not change ALC data. (Refer to ALC Adjustment)

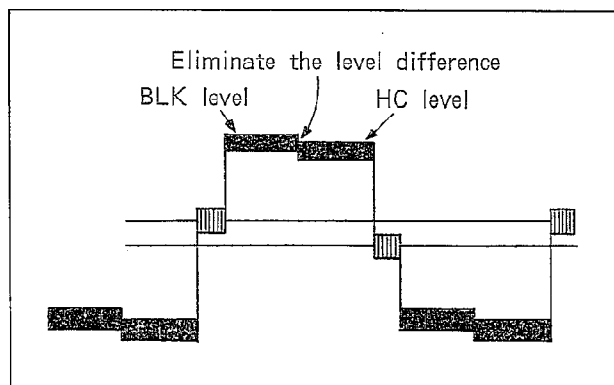
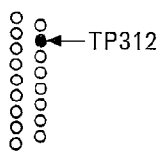


Fig. C25

12. FH/2 LEVEL DIFFERENCE ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	06	05		OSCILLOSCOPE
SPEC.			TP	
NO SIGNAL LEVEL DIFFERENCE			TP312	
CONDITION				
LENS CAP: ON (OR IRIS CLOSE)				
			TP ARRAY ON PROCESS	

Note:

Regarding the connection of EVR, refer to preparation (Fig. C6) and Initial setting.

1. Cover the lens with LENS CAP or close the IRIS.
2. Connect the oscilloscope to TP312.
3. Push the "CMD" key, "0" key and "1" key of EVR.
4. Push the "ADR" key, "0" and "6" key.
5. Push the "INC" key or "DEC" key so that level difference of R-Y dark signal and B-Y dark signal become nothing. (so that R-Y dark level equals to B-Y dark level)
6. Push the "SHIFT 1" key and "0" key together to write its adjusted data into EEPROM.

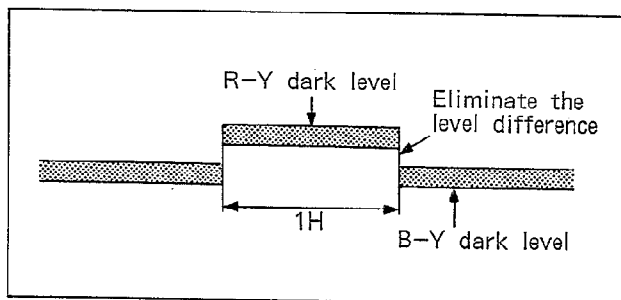
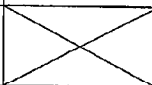
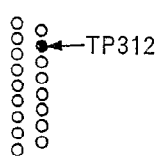


Fig. C26

13. CHROMA PEDESTAL ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	05	04		OSCILLOSCOPE
SPEC.			TP	
NO SIGNAL LEVEL DIFFERENS			TP312	
CONDITION				
LENS CAP (OR IRIS CLOSE)				
			TP ARRAY ON PROCESS	

Note:

Regarding the connection of EVR, refer to preparation (Fig. C6) and Initial setting.

1. Cover the lens with lens cap or close the Iris.
2. Connect the oscilloscope to TP312.
3. Push the "CMD" key, "0" and "1" key of EVR.
4. Push the "ADR" key, "0" key and "5" key.
5. Push the "INC" key or "DEC" key so that BLK level equals to dark level.
6. Push the "SHIFT 1" key and "0" key together to write its adjusted data.

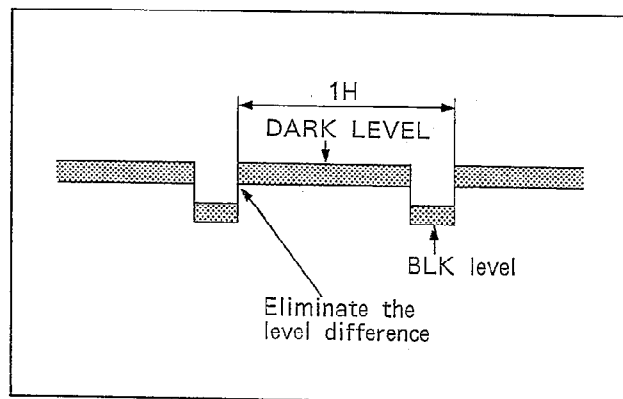
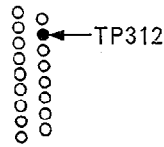


Fig. C27

14. R LEAK ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	13	11	BLACK AND WHITE CHART	OSCILLOSCOPE
SPEC.			TP	
BLK LEVEL BECOMES EQUALS TO HC LEVEL			TP312	
CONDITION				
ALC: 400mV HC: ON				
			TP ARRAY ON PROCESS	

Note:

Regarding the connection of EVR, refer to Preparation (Fig. C6) and Initial setting.

1. Readjust the ALC adjustment so that waveform becomes 400mV. (Refer to ALC Adjustment) But do not write its data to EEPROM. (Do not perform Item 6 of ALC adjustment).
2. Take the HC on by pushing the "SHIFT 1" key and "8" key together.
3. Connect the oscilloscope to TP312.
4. Push the "CMD" key, "0" key and "1" key.
5. Push the "ADR" key, "1" key and "3" key.
6. Push the "INC" or "DEC" so that BLK level equals to HC level as much as possible.
7. When best point comes, Push the "SHIFT 1" key and "0" key together.
8. Return the ALC adjustment to 300mV. If you push the "SHIFT 1" key and "1" key together (Initial setting), ALC will return to 300mV if did not change ALC data of EEPROM.

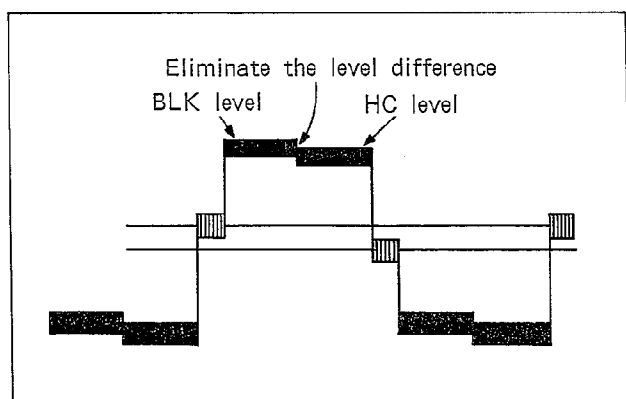
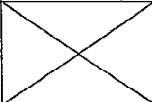
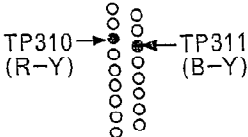


Fig. C28

15. R-Y, B-Y PEDESTAL ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	03 (R-Y) 04 (B-Y)	02 (R-Y) 03 (B-Y)		OSCILLOSCOPE
SPEC.				
BLK LEVEL EQUALS TO DARK LEVEL			TP310, TP311	
CONDITION				
IRIS CLOSE (LENS CAP: ON) AGC: MINIMUM				
			TP ARRAY ON PROCESS	

Note:

Regarding the connection of EVR, refer to Preparation (Fig. C6) and Initial setting.

1. Cover the lens with lens cap or close the IRIS.
2. Push the "SHIFT 1" key and "4" key together to minimized the AGC.
3. Connect the oscilloscope to TP310 (R-Y).
4. Push the "CMD" key, "0" key and "1" key.
5. Push the "ADR" key, "0" key and "3" key.
6. Push the "INC" key or "DEC" key so that dark level becomes equal to BLK level.
7. Push the "SHIFT 1" key and "0" key to write its adjusted data into EEPROM.
8. Connect the oscilloscope to TP311 (B-Y).
9. Change the address "ADR" to 04" with command "01".
10. Push the "INC" key or "DEC" key so that dark level becomes equal to BLK level.
11. Write its adjusted data by pushing the "SHIFT 1" key and "0" key together.
12. Return the AGC to normal by pushing "SHIFT 1" key and "1" key.
13. Connect the vectorscope to video output.
14. Confirm that vector comes to centre while IRIS is closed.
15. If vector is not centre, readjust the CHROMA PEDESTAL and FH/2 LEVEL DIFFERENCE ADJUSTMENT so that vector comes to centre.
16. Confirm R-Y, B-Y PEDESTAL ADJUSTMENT.

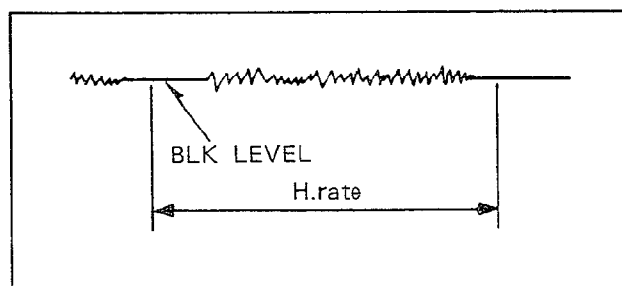
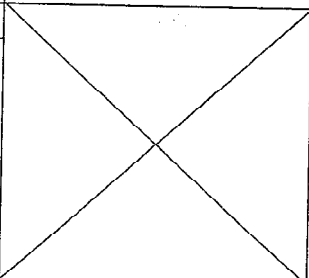


Fig. C29

16. INDOOR WHITE BALANCE ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	0B (R-Y) 0C (B-Y)	60 (R-Y) 63 (R-Y)	WHITE CHART	VECTOR- SCOPE OR OSCILLO- SCOPE
SPEC.			TP	
CENTER OF VECTORSCOPE OR WAVEFORM IS MINIMIZED (OSCILLOSCOPE)			VIDEO OUT	
CONDITION				
IRIS VR: CENTRE				

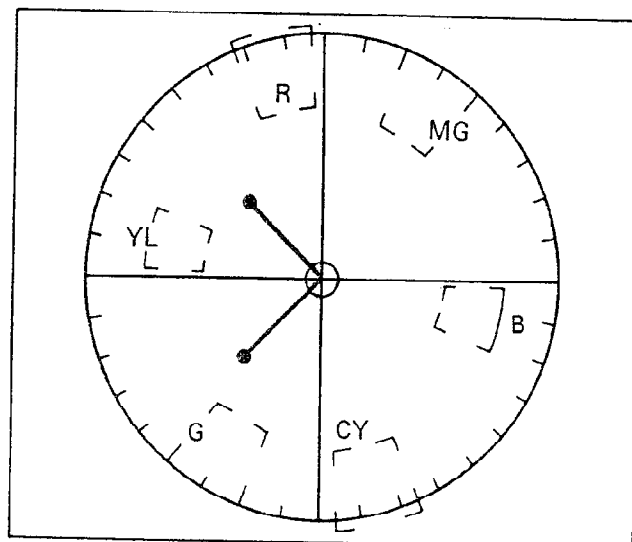


Fig. C30 With Vectorscope

Note:

Regarding the connection of EVR, refer to Preparation (Fig. C6) and Initial setting.

1. Aim the camera at white chart.
2. Connect the Video out to Vectorscope or oscilloscope.
3. Set the command "01" by pushing "CMD" key, "0" key and "1" key.
4. Set the address "0B" (R-Y) by pushing "ADR" key, "0" key and "B" key.
5. (In case of vectorscope) Push "INC" key or "DEC" key so that vector approaches to centre as much as possible.
6. (In case of oscilloscope) Push "INC" key or "DEC" key so that waveform is minimized.
7. When best point comes, Push the "SHIFT 1" key and "0" key together to write its adjusted data into EEPROM.
8. Change the address to "0C" by pushing "ADR" key "0" key and "C" key.
9. Adjust the data by pushing "INC" key or "DEC" key so that vector approaches to centre (Vectorscope) or so that waveform is minimized.
10. When best point comes, Push the "SHIFT 1" key and "0" key together to write its adjusted data into EEPROM.
11. Repeat 3. to 10. until vector comes to centre (Vector scope) or waveform is minimized (Oscilloscope).

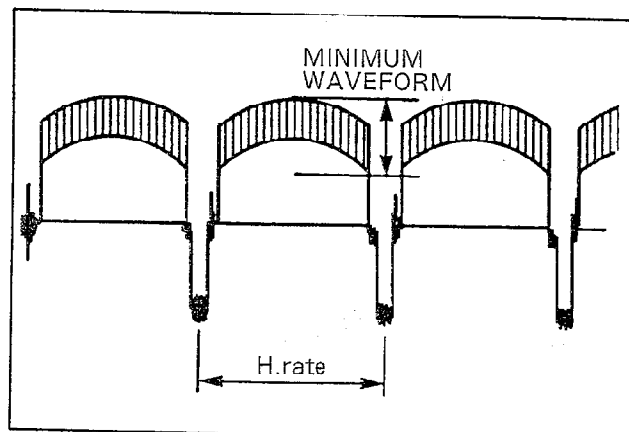


Fig. C31 With Oscilloscope

17. COLOUR PHASE AND GAIN ADJUSTMENT (INDOOR)

CMD	ADDRESS		CHART	TP
	D/A	EEPROM		
1	09, 07	62, 65	COLOUR CHIP CHART	VIDEO OUT
	(PHASE)	(PHASE)		
	0A, 08	61, 64		
	(GAIN)	(GAIN)		
M. EQ			SPEC.	
VECTORSCOPE			RED: 106±3 degree/PHASE 185±5%/GAIN YEL: 165±3 degree/PHASE 140±5%/GAIN	

Note:

Regarding the connection of EVR, refer to Preparation (Fig. C6) and Initial setting.

1. Aim the camera at colour chip chart.
2. Connect the video output to vectorscope.
3. Set the command to "01" by pushing the "CMD" key, "0" key and "1" key.
4. Set the address to "09" (R-Y phase) by pushing the "ADR" key, "0" key and "9" key.
5. Push the "INC" key or "DEC" key so that phase of Red vector and Yellow vector approach to the spec.
6. When best point comes, push "SHIFT 1" key and "0" key together to write its adjusted data to EEPROM.
7. Change the address to "07" (B-Y Phase) by pushing the "ADR" key, "0" key and "7" key.
8. Push the "INC" key or "DEC" key so that phase of Red and Yellow vectors approach to the spec.
9. When best point comes, push the "SHIFT 1" key and "0" key together to write its adjusted data.
10. Change the address to "0A" (R-Y Gain) by pushing "ADR" key, "0" key and "A" key.
11. Push the "INC" key or "DEC" key so that gain of Red and Yellow vectors approach to the spec.
12. When best point comes, push the "SHIFT 1" key and "0" key together to write its adjusted data.
13. Change the address to "08" (B-Y Gain).
14. Push the "INC" or "DEC" key so that gain of Red and Yellow vectors approach to the spec.
15. When best point comes, push the "SHIFT 1" key and "0" key together to write its adjusted data.
16. Repeat the 3 to 15 until vectors become within spec as shown in Fig. C32.

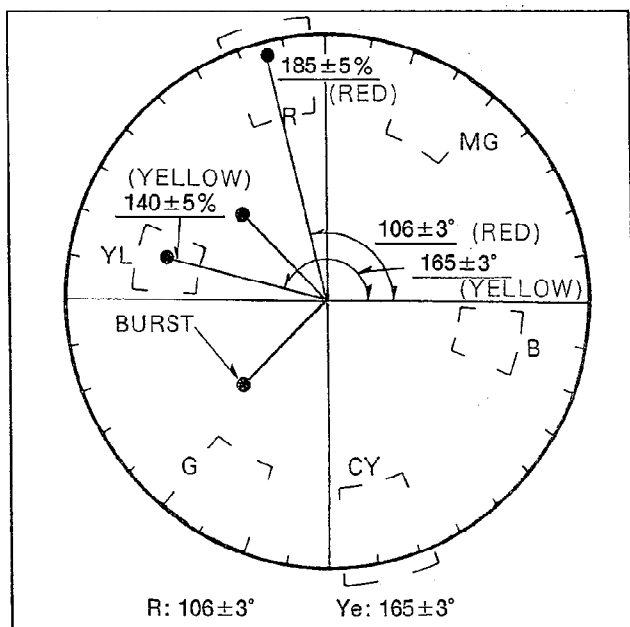


Fig. C32

18. OUTDOOR WHITE BALANCE ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	0B (R-Y) 0C (B-Y)	72 (R-Y) 75 (B-Y)	WHITE CHART	VECTOR- SCOPE OR OSCILLO- SCOPE
SPEC.			TP	
VECTOR COMES CENTRE OR WAVEFORM IS MINIMIZED			TP312	
CONDITION			TP ARRAY ON PROCESS	
WHITE BALANCE: OUTDOOR IRIS VR: CENTRE COLOUR TEMPERATURE CONVERSION FILTER: VFK0324				

Note:

Regarding the connection of EVR, refer to Preparation (Fig. C6) and Initial setting. Do not use "SHIFT 1"+"0" for writing data because this function is not operated for this adjustment.

1. Set the white balance switch to "OUT DOOR".
2. Aim the camera at white chart.
3. Connect the video out to vectorscope or oscilloscope.
4. Cover the lens with colour temperature conversion filter VFK0324 to imitate the outdoor lighting.
5. Set the command to "01" by pushing "CMD" key, "0" key and "1" key.
6. Set the address to "0B" by pushing "ADR" key, "0" key and "B" key.
7. (In case of use of vectorscope) Push the "INC" key or "DEC" key so that vector comes to centre as much as possible.
8. (In case of use of oscilloscope) Push the "INC" key or "DEC" key so that waveform is minimized.
9. When the best point comes, change the command to "02" by pushing "CMD" key, "0" key and "2" key, and change the address to "72" by pushing the "ADR" key, "7" key and "2" key. (Do not change the data) Then, push the "SET" key to write its adjusted data to EEPROM directly.
10. Change the address to "0C". (Command is "01")
11. Push the "INC" key and "DEC" key so that vector comes to centre or so that waveform is minimized.
12. When the best point comes, change the command to "02" and change the address to "75" (Do not change the data) then push the "SET" button to write its data to EEPROM directly.
13. Repeat 4. to 11. until vector comes centre or waveform is minimized

17. Write the above data into following address, too as follows.
Write the adjusted data "R-Y PHASE" (EEPROM ADDRESS 62) into R-Y MAT IN (EEPROM ADDRESS 1C)
Write the adjusted data "B-Y PHASE" (EEPROM ADDRESS 65) into B-Y MAT IN (EEPROM ADDRESS 1F)
Write the adjusted data "R-Y GAIN" (EEPROM ADDRESS 61) into R-Y GC IN (EEPROM ADDRESS 1B)
Write the adjusted data "B-Y GAIN" (EEPROM ADDRESS 64) into B-Y GC IN (EEPROM ADDRESS 1E)

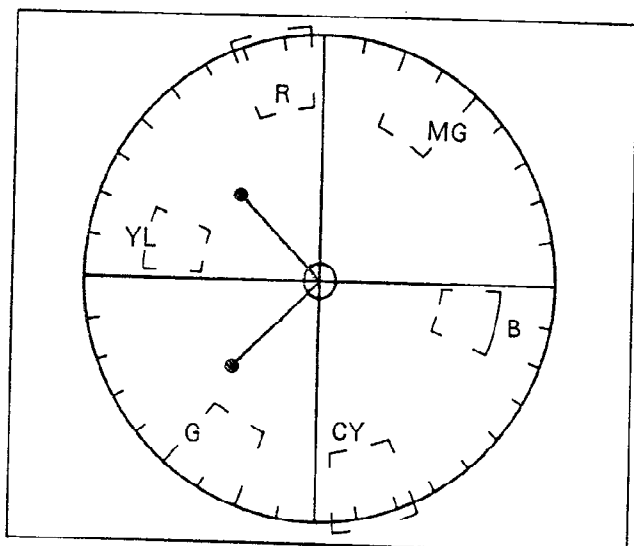


Fig. C33 With Vectorscope

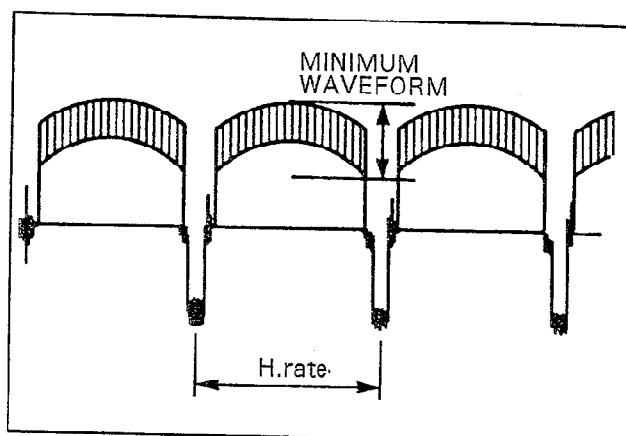


Fig. C34 With Oscilloscope

19. COLOUR PHASE AND GAIN ADJUSTMENT (OUTDOOR)

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	09, 07 (PHASE) 0A, 08 (GAIN)	74, 77 (PHASE) 73, 76 (GAIN)	COLOUR CHIP CHART	VIDEO OUT
SPEC.			TP	
VECTORSCOPE			RED: 106 ±3 degree/PHASE 185 ±5%/GAIN YEL: 160 ±5 degree/PHASE 135 ±5%/GAIN	

Note:

Regarding the connection of EVR, refer to Preparation (Fig. C6) and Initial setting. Do not use "SHIFT 1"+"0" for writing because this function is not operated correctly for this adjustment.

1. Aim the camera at colour chip chart. and cover the lens with colour temperature conversion filter VFK0324.
2. Connect the video output to vectorscope.
3. Set the command to "01" by pushing the "CMD" key, "0" key and "1" key.
4. Set the address to "09" (R-Y PHASE) by pushing the "ADR" key, "0" key and "9" key.
5. Push the "INC" key or "DEC" key so that phase of Red and Yellow vectors approach to spec.
6. When best point comes, change the command to "02" by pushing "CMD" key, "0" key and "2" key and change the address to "74" by pushing the "ADR" key, "7" key and "4" key (Do not change the data) and then push the "SET" key to write its adjusted data into EEPROM directly.
7. Change the command to "01" by pushing the "CMD" key, "0" key and "1" key. Change the address to "07" by pushing the "ADR" key, "0" key and "7" key.
8. Push the "INC" key or "DEC" key so that phase of Red and Yellow vectors approach to the spec.
9. When best point comes, change the command to "02" by pushing the "CMD" key, "0" key and "2" key. (Do not change the data), and change the address to "77" by pushing "ADR" key, "7" key and "7" key. Then, Push the "SET" key to write its adjusted data to EEPROM Directly.
10. Change the command to "01" by pushing the "CMD" key, "0" key and "1" key. Change the address to "0A" (R-Y Gain) by pushing "ADR" key, "0" key and "A" key.
11. Push the "INC" or "DEC" key so that gain of Red and Yellow vectors approach to the spec.
12. When best point comes, change the command to "02" and change the address to "73" while keeping the data. Then, Push the "SET" key to write its adjusted data to EEPROM directly.
13. Change the command to "01". Change the address to "08" (B-Y Gain).
14. Push the "INC" or "DEC" key so that gain of Red and Yellow vectors approach to the spec.
15. When the best point comes, change the command to "02" and change the address to "76" (do not change the data). Then, Push the "SET" key to write adjusted data to EEPROM directly.
16. Repeat the 3. to 15. until vectors become within spec as shown in Fig. C35.

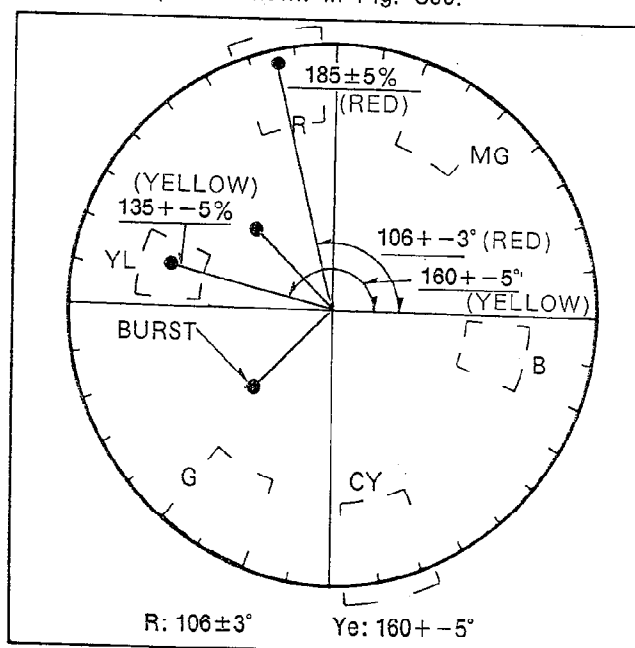
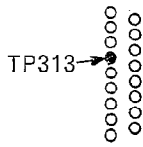


Fig. C35

20. EDGE CORRECTION ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	19	.0C	BLACK AND WHITE CHART	OSCILLOSCOPE
SPEC.			TP	
ELIMINATE THE EDGE COMPONENTS			TP313	
CONDITION				
ALC: 800mV				
			TP ARRAY ON PROCESS	

Note:

Regarding the connection of EVR, refer to Preparation (Fig. C6) and Initial setting.

1. Readjust the ALC adjustment so that spec become 800mV. (Refer to ALC adjustment). But do not write its data into EEPROM (Do not perform item 6 of ALC adjustment)
2. Aim the camera at Black and White chart.
3. Connect the oscilloscope to TP313.
4. Set the command to "01".
5. Set the address to "19".
6. Push the "INC" key or "DEC" key so that Edge signal as shown below is minimized.
7. Push the "SHIFT 1" key and "0" key together to write its adjusted data into EEPROM.
8. Return the ALC to 300mV. Push the "SHIFT 1" key and "1" key together (Initial setting), ALC return to 300mV if you did not change the data of EEPROM.

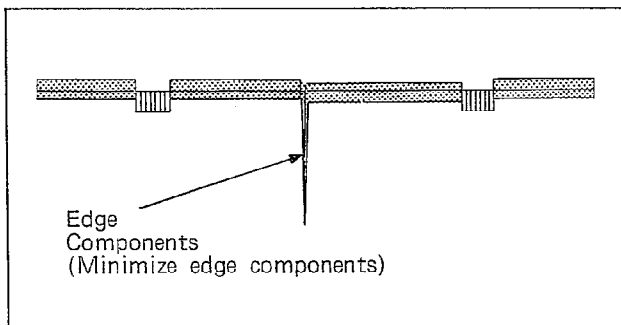
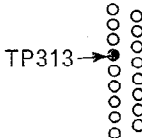


Fig. C36

21. HC (High Cut) ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	D/A	EEPROM		
01	01	00	GRAY SCALE	OSCILLOSCOPE
SPEC.			TP	
AS SHOWN IN FIG. C38			TP313	
CONDITION				
ALC: 800mV Colour Temperature Conversion filter: VFK0547				
			TP ARRAY ON PROCESS	

Note:

Regarding the connection of EVR, refer to Preparation (Fig. C6) and Initial setting.

1. Readjust the ALC to 800mV. But do not write the data into EEPROM (Do not perform item 6 of ALC Adjustment) (Refer to ALC ADJUSTMENT)
2. Aim the camera at Gray scale chart.
3. Cover the lens with colour Temperature conversion filter VFK0547.
4. Connect the oscilloscope to TP313.
5. Set the command to "01".
6. Set the address to "01".
7. Push the "INC" key or "DEC" key so that first step of gray scale chart becomes less than 20mV and 3rd step of gray scale chart becomes more than 40mV as shown in Fig. C36-1.
8. Push the "SHIFT 1" key and "0" key together to write its adjusted data to EEPROM.
9. Return the ALC to 300mV. Push the "SHIFT 1" key and "1" key together, ALC will return to original level (300mV) if you did not change ALC.

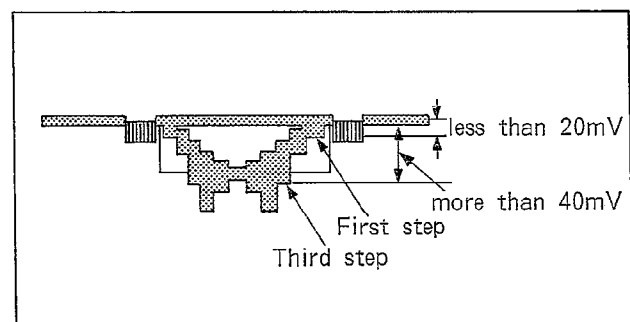


Fig. C36-1

23. DATA WRITING FOR COLOUR REPRODUCTION:

Calculate all following formula and write these result into proper EEPROM address.

NO.	ITEM	EEPROM ADDRESS	RESULT OF CALCULATION	FORMULA
1	R-Y WB 28	4A		$ADR60 + 0.2 \times (ADR72 - ADR60)$
2	R-Y WB 36	66		$ADR60 + 0.48 \times (ADR72 - ADR60)$
3	R-Y WB 45	6C		$ADR60 + 1.03 \times (ADR72 - ADR60)$
4	R-Y WB 60	78		$ADR60 + 1.17 \times (ADR72 - ADR60)$
5	R-Y WB HE	40		ADR70
6	R-Y GC 28	5B		ADR61
7	R-Y GC 36	67		$ADR61 + 0.9 \times (ADR73 - ADR61)$
8	R-Y GC 45	6D		ADR73
9	R-Y GC 60	79		ADR73
10	R-Y GC HE	41		ADR73
11	R-Y MAT 28	5C		ADR62
12	R-Y MAT 36	68		$ADR62 - 0.88 \times (ADR62 - ADR74)$
13	R-Y MAT 45	6E		$ADR62 - 0.88 \times (ADR62 - ADR74)$
14	R-Y MAT 60	7A		ADR74
15	R-Y MAT HE	42		ADR74
16	B-Y WB 28	5D		$ADR63 - 0.24 \times (ADR75 - ADR63)$
17	B-Y WB 36	69		$ADR63 + 0.2 \times (ADR75 - ADR63)$
18	B-Y WB 45	6F		$ADR63 + 0.56 \times (ADR75 - ADR63)$
19	B-Y WB 60	7B		$ADR63 + 1.24 \times (ADR75 - ADR63)$
20	B-Y WB HE	43		ADR75
21	B-Y GC 28	5E		ADR64
22	B-Y GC 36	6A		$ADR64 - 0.77 \times (ADR64 - ADR76)$
23	B-Y GC 45	70		ADR76
24	B-Y GC 60	7C		ADR76
25	B-Y GC HE	44		ADR76
26	B-Y MAT 28	5F		ADR65
27	B-Y MAT 36	6B		$ADR65 - 0.85 \times (ADR65 - ADR77)$
28	B-Y MAT 45	71		ADR77
29	B-Y MAT 60	70		ADR77
30	B-Y MAT HE	45		ADR77

Fig. C37 calculation

24. R-Y, B-Y OFFSET SETTING.

* Read out the A/D address data of R-Y, B-Y and write its into EEPROM as follows.

(1) R-Y OFFSET

1. Set the command to "05" by pushing "CMD" key, "0" key and "5" key.
2. Set the address to "03" by pushing "ADR" key, "0" key and "3" key.
3. Push the "SET" key and memo its data.
4. Set the command to "02".
5. Set the address to "3A".
6. Push the data key and enter the memorized number at 3.
(for example, if its data is "7C" Push "7" key and "C" key)
7. Push the "SET" key to write it into EEPROM.

(2) B-Y OFFSET

1. Set the command to "05"
2. Set the address to "04"
3. Push the "SET" button and memo its data
4. Set the command to "02"
5. Set the address to "3B"
6. Push the "DATA" key and enter the memorized number at 3.
7. Push the "SET" key to write it into EEPROM.

25. AWB DATA SETTING FOR INDOOR

ITEM	AD ADDRESS	READ OUT DATA	
		AT WHITE	AT DARK
AWBY	05		
		WRITE TO 39 (EEPROM)	WRITE TO 3F (EEPROM)
S/H 1	06		
			WRITE TO 3C (EEPROM)
S/H 2	16		
			WHITE TO 3P (EEPROM)

Fig. C38 Memo 1

Note:

Set the White balance SW to "INDOOR".

(1) AWBY (DARK)

1. Cover the lens with lens Cap or close the IRIS.
2. Set the command to "05" (Reading the A/D converted data)
3. Set the address to "05".
4. Push the "SET" key to read out the A/D data. If data is within "08" to "20", take memo of its data. (to blank column of above table Fig. C38)
If data is not within "08" to "20", change the D/A data with command "01", address "1A" so that A/D data becomes within "08" to "20" as follows.
 * Set the command to "01"
 * Set the address to "1A"
 * Push the "INC" or "DEC" key
 * Confirm the A/D data (by doing 2. to 4)
 * Repeat these until A/D data becomes within "08" to "20" and take memo of its A/D data (to blank column).

(2) S/H 1 (DARK)

1. Cover the lens with lens Cap or close the IRIS.
2. Set the command to "05" (Reading the A/D converted data)
3. Set the address to "06"
4. Push the "SET" key to read out the A/D data. If data which is read out is within "04" to "20", take memo of its data (to blank column Fig. C38).
If data is not within "04" to "20", change the D/A data with command "01", address "1A" so that A/D data becomes within "04" to "20" as follows.
 * Set the command to "01".
 * Set the address to "1A".
 * Push the "INC" key or "DEC" key
 * Confirm the A/D data (by doing 2. to 4.)
 * Repeat above 2. to 4. until A/D data becomes "04" to "20" and take memo of its data. (to blank column Fig. C38)

(3) S/H 2 (DARK)

1. Cover the lens with lens cap or close the IRIS
2. Set the command to "05" (Reading the A/D converted data)
3. Set the address to "16"
4. Push the "SET" key to read out the data. If data which is read out is within "04" to "20", take memo of its data (to blank column of Fig. C38)
If data is not within "04" to "20", change the D/A data with command "01", address "1C" so that A/D data becomes within "04" to "20" as follows.
 * Set the command to "01".
 * Set the address to "1A".
 * Push the "INC" key or "DEC" key
 * Confirm the A/D data (by doing 2. to 4.)
 * Repeat above 2. to 4. until A/D data becomes "04" to "20" and take memo of its data. (to blank column Fig. C38)

(4) AWBY (WHITE)

1. Aim the camera at white chart.
2. Set the command to "05"
3. Set the address to "05"
4. Push the "SET" key to read out the AD data. and take memo of the number which is indicated on DATA LED. to blank column of above table. (Fig. C38)

(5) S/H 1 (WHITE)

1. Aim the camera at white chart.
2. Set the command to "05"
3. Set the address to "06"
4. Push the "SET" key to read out the AD data. and take memo of its number to blank column. (Fig. C38)

(6) S/H 2 (WHITE)

1. Aim the camera at white chart.
2. Set the command to "05".
3. Set the address to "16".
4. Push the "SET" key to read out the data and take memo of its data. into blank column of Fig. C38

(7) Writing the data AWBY (WHITE) to "39"

1. Set the command to "02"
2. Set the address to "39"
3. Push the "DATA" key and enter the data of AWBY (WHITE) which is taken memo at (4).
4. Push the "SET" key to write its data.

AWBY (DARK) to "3F"

5. Set the command "02".
6. Set the address to "3F"
7. Push the "DATA" key and enter the data of AWBY (DARK) which is taken memo at (1).
8. Push the "SET" key to write its data.

S/H 1 (DARK) to "3C"

9. Set the command to "02".
10. Set the address to "3C".
11. Push the "DATA" key and enter the data of S/H 1 (DARK) which is taken memo at (2)
12. Push the "SET" key to write its data.

S/H 2 (DARK) to "3D"

13. Set the command to "02"
14. Set the address to "3D"
15. Push the "DATA" key and enter the data of S/H 2 (DARK) which is taken memo at (3).

(8) Calculation of AWB INDOOR SETTING.

Convert the data that you took memo to decimal number using conversion table Fig. C12. And substitute the these data into following formula then, calculate it. And take memo of it.

$$(A) \text{ S/H1 31} = \frac{\text{memo} \cdot \text{S/H 1(WHITE)} - \text{S/H 2 (DARK)}}{\text{AWBY(WHITE)} - \text{AWBY(DARK)}} \times 128$$

$$(B) \text{ S/H2 31} = \frac{\text{memo} \cdot \text{S/H 2(WHITE)} - \text{S/H 2(DARK)}}{\text{AWBY(WHITE)} - \text{AWBY(DARK)}}$$

Fig. C39 Calculation 2 and memo.

26. AWB DATA SETTING FOR OUTDOOR MEMO

ITEM	AD ADDRESS	READ OUT DATA	
		WHITE	DARK
AWBY	05		Same as 23.
S/H 1	06		Same as 23.
S/H 2	16		Same as 23.

Fig. C40 Memo

Using same way as "23, AWB DATA SETTING FOR INDOOR", read out the data of AD address "05", "06", "16" when lens is covered with VFK0324.

(1) AWBY (WHITE)

1. Aim the camera at white chart.
2. Cover the lens with VFK0324.
3. Set the command to "05".
4. Set the address to "05".
5. Push the "SET" key to read the data and take memo of its data. into blank column of Fig. C40.

(2) S/H 1(WHITE)

1. Aim the Camera at white chart.
2. Cover the lens with VFK0324.
3. Set the command to "05".
4. Set the address to "06".
5. Push the "SET" key and take memo of its data into blank column Fig. C40.

(3) S/H 2 (WHITE)

1. Aim the camera at white chart.
2. Cover the lens with VFK0324.
3. Set the command to "05".
4. Set the address to "16".
5. Push the "SET" key and take memo of its data into blank column of Fig. C40.

(4) Calculation of AWB OUTDOOR SETTING.

Convert the data that you took memo of Fig. C40. to decimal number using conversion table Fig. C12. Substitute its data into following formula. and calculate it and take memo of result into blank column of Fig. C41.

$$\begin{aligned}
 \text{(C) S/H1 51} &= \frac{\text{Memo S/H1(WHITE)} - \text{S/H1(DARK)}}{\text{AWBY(WHITE)} - \text{S/H1(DARK)}} \times 128 \\
 \text{(D) S/H2 51} &= \frac{\text{Memo S/H2(WHITE)} - \text{S/H2(DARK)}}{\text{AWBY(WHITE)} - \text{AWBY(DARK)}} \times 128
 \end{aligned}$$

Fig. C41 Calculation 3 and Memo

27. DATA SETTING FOR COLOUR TEMPERATURE DETECTION AND COLOUR TEMPERATURE COLOUR DETECTION.

1. Substitute the decimal data (A,B,C,D) from memo Fig. C39, Fig. C41 into following formula and calculate it.
2. Then, convert its result (decimal data) to hexadecimal data using conversion table Fig. C12.
3. Write its data into proper EEPROM address with command "02"
4. Refer to "FOR EXAMPLE" of next.

NO.	ITEM	EEPROM ADDRESS	RESULT OF CALCULATION	FORMULA
1	S/H2 31→28	46		$(B) + 0.09 \times ((D) - (B))$
2	S/H2 28→31	47		$(B) + 0.09 \times ((D) - (B))$
3	S/H2 36→31	48		$(B) + 0.25 \times ((D) - (B))$
4	S/H2 31→36	49		$(B) + 0.25 \times ((D) - (B)) + 4$
5	S/H2 45→36	4A		$(B) + 0.55 \times ((D) - (B))$
6	S/H2 36→45	4B		$(B) + 0.55 \times ((D) - (B)) + 4$
7	S/H2 51→45	4C		$(B) + 0.85 \times ((D) - (B))$
8	S/H2 45→51	4D		$(B) + 0.85 \times ((D) - (B)) + 4$
9	S/H2 60→51	4E		$(B) + 1.28 \times ((D) - (B))$
10	S/H2 51→60	4F		$(B) + 1.28 \times ((D) - (B)) + 10$
11	S/H1 G28	20		$(A) - 27$
12	S/H1 G31	21		$(A) - 11$
13	S/H1 G36	22		$(A) - 15$
14	S/H1 G45	23		$(A) - 11$
15	S/H1 G51	24		$(A) + 21$
16	S/H1 G60	25		$(A) + 37$
17	S/H1 GPD	26		$(A) + 5$
18	S/H1 Mg 28	28		$(A) + 37$
19	S/H1 Mg 31	29		$(A) + 53$
20	S/H1 Mg 36	2A		$(A) + 53$
21	S/H1 Mg 45	2B		$(A) + 53$
22	S/H1 Mg 51	2C		$(A) + 85$
23	S/H1 Mg 60	2D		$(A) + 101$
24	S/H1 Mg PD	2E		$(A) + 69$

Fig. C42

(FOR Example)

Item	EEPROM ADDRESS	FORMULA
S/H2 45-36	D4A	$(B)+0.55 \times ((D)-(B))$

1. Substitute the decimal data of (B), (D) from Fig. C39, Fig. C41.
 $= 12 + 0.55 \times (147-12)$
 $= 12 + 0.55 \times 135$
 $= 12 + 74.25$
 $= 86.25$
 $= 86 = \text{RESULT OF CALCULATION}$
2. Convert the result of hexadecimal.
decimal 86 = hexadecimal 56.
3. Set the command to "02".
4. Set the address to "4A".
5. Set the data to "56" by pushing "DATA" key, "5" key and "6" key.
6. Push the "SET" key to write the data.

28. WRITING THE DATA DIRECTLY

Note:

Unless you replace the EEPROM IC, this adjustment is not required.

- 1 Write the following data to EEPROM directly with command "02".

NO.	ITEM	EEPROM ADDRESS	DATA
1	FADE TIME 1	30	40
2	MEMORY SW1	31	00
3	MEMORY SW2	32	10
4	MEMORY SW3	33	08
5	WRITE PROTECT	34	00
6	D.K HOLD L	35	10
7	FADE TIME 2	36	20
8	MEMORY SW4	37	10
9	D.J.T. 1	50	08
10	D.J.T. 2	51	02
11	D.J.T. 3	52	01
12	D.J.T. 4	53	01
13	D.J.T. 5	54	08
14	D.J.T. 6	55	04

15	D.K.T. 1	56	01
16	D.K.T. 2	57	04
17	D.K.T. 3	58	04
18	D.K.T. 4	59	04
19	D.K.T. 5	5A	04
20	D.K.T. 6	5B	01

Fig. C43

AUTO FOCUS SECTION

29. AF HALL AMP OFFSET GAIN ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
TP302	VR302 VR301	NO	
M. EQ.		SPEC.	
D.V.M.		CLOSE: VREF 3 ± 50 mV OPEN: VREF 1 ± 20 mV	

1. Close the IRIS using IRIS VR.
2. Adjust VR302 so that voltage at TP302 becomes $V_{REF3} \pm 50$ mV. V_{REF3} is a voltage at TP317.
3. Open the IRIS using IRIS VR.
4. Adjust VR301 so that voltage at TP302 becomes $V_{REF1} \pm 20$ mV. V_{REF1} is a voltage at TP301

30. AF GATE ADJUSTMENT

TP	ADJ.	IRIS CAP	CHART
TP706 TP707	C726	NO	
M. EQ.		SPEC.	
OSCILLOSCOPE		$T = 38 \pm 1 \mu\text{sec}$	

Note:

TP702, TP703, C703 : AF C.B.A.

- (1) Set the AF Gate Control (C726) as shown in Fig. C44.

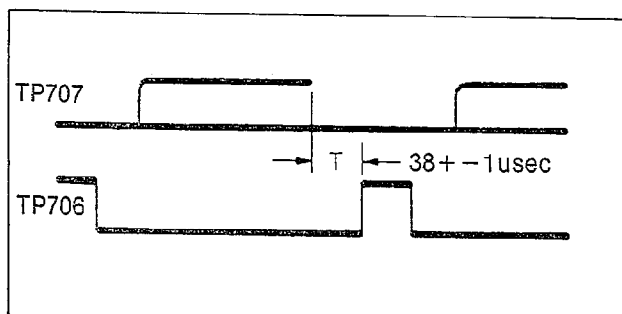


Fig. C44

ELECTRICAL ADJUSTMENT FOR E.V.F. SECTION

The following adjustments are for Electronic Viewfinder.

- (1) Connect the Viewfinder plug to the E V F connector on the unit.
- (2) The camera circuit must be completely aligned before viewfinder adjustments are made.

1. H-OSC ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
Pin 1 of P801	VR802	NO	BALL CHART
M. EQ.		SPEC.	
FREQUENCY COUNTER		16.1kHz $\pm$ 0.1kHz	

Note:

P801, VR802 : E.V.F. C.B.A.

- (1) Connect the scope to Pin C.B.A. of P801, use DC.
- (2) Adjust the H-OSC (VR802) so that the frequency is 16.1 $\pm$ 0.1kHz.

2. CENTERING ADJUSTMENT

- (1) Aim the camera at the registration chart.
- (2) Adjust the Deflection Yoke Centering Magnets by turning them so that the picture on monitor TV is centered.

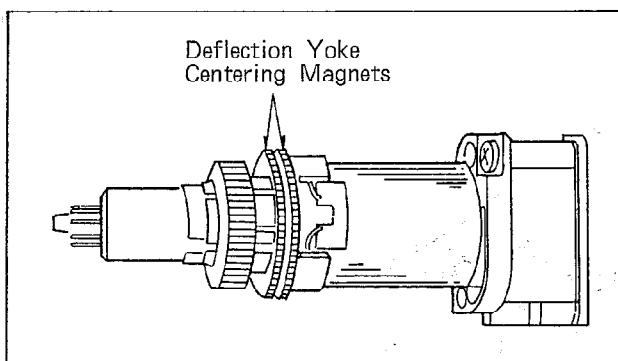


Fig. C45

3. FOCUS ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
	VR803	NO	BALL CHART
M. EQ.		SPEC.	
VIEWFINDER		BEST RESOLUTION	

Note:

VR803 : E.V.F. C.B.A.

- (1) Aim the camera at the Ball chart.
- (2) Adjust the focus control (VR803) for best resolution in the viewfinder.

4. V. SIZE ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
	VR801	NO	GRAY SCALE CHART
M. EQ.		SPEC.	
VIEWFINDER		VERTICAL SIZE IS FIXED	

Note:

VR801 : E.V.F. C.B.A.

- (1) Aim the camera at the gray scale chart.
- (2) Adjust the Vertical Size (VR801) so the Vertical Size is correct and the picture does not roll as shown in Fig. C46.

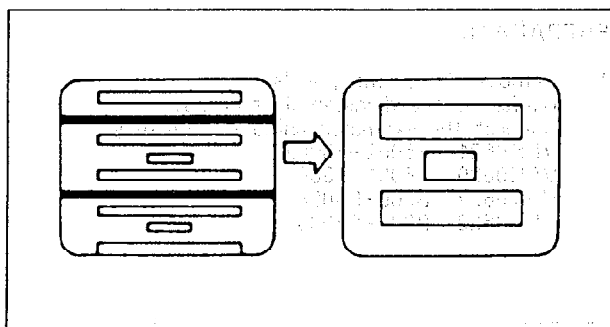


Fig. C46

5. BRIGHTNESS ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
	VR804	NO	GRAY SCALE CHART
M. EQ.		SPEC.	
VIEWFINDER		NATURAL GRADATION	

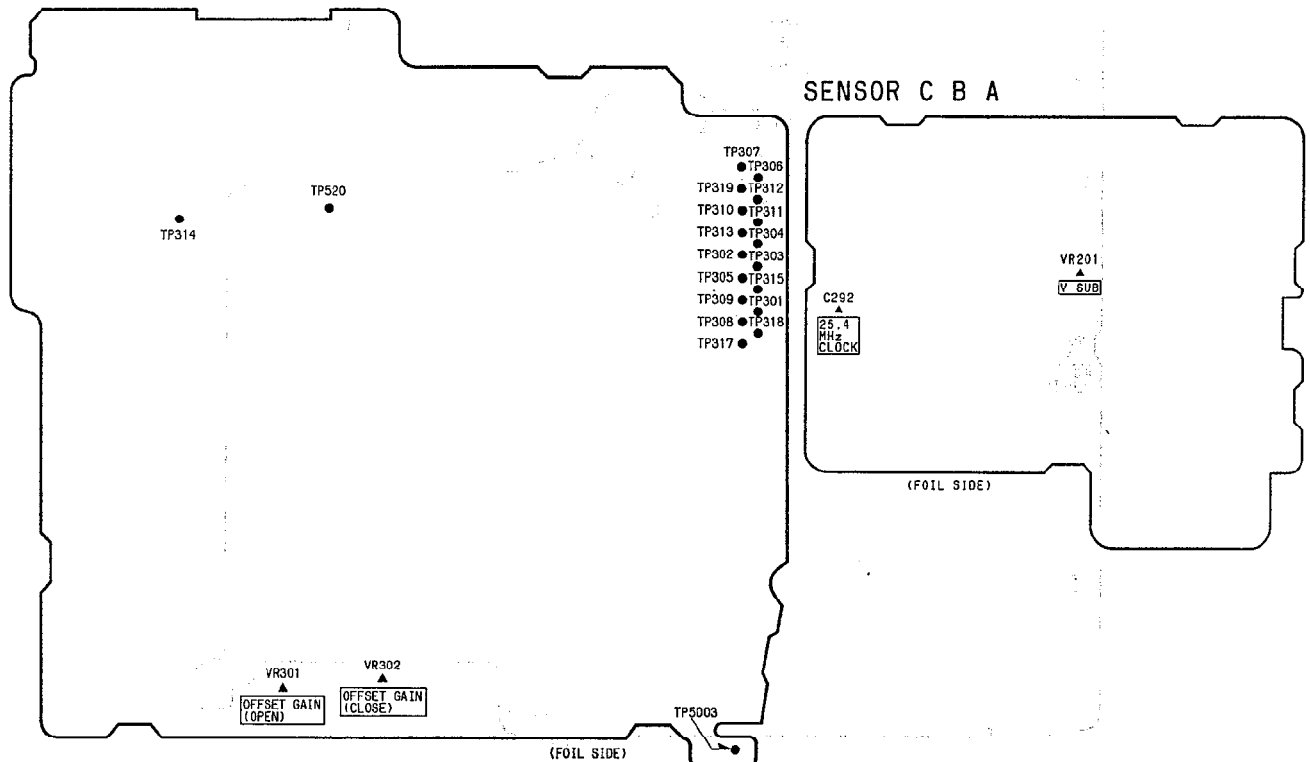
Note:

VR804 : EVF C B A

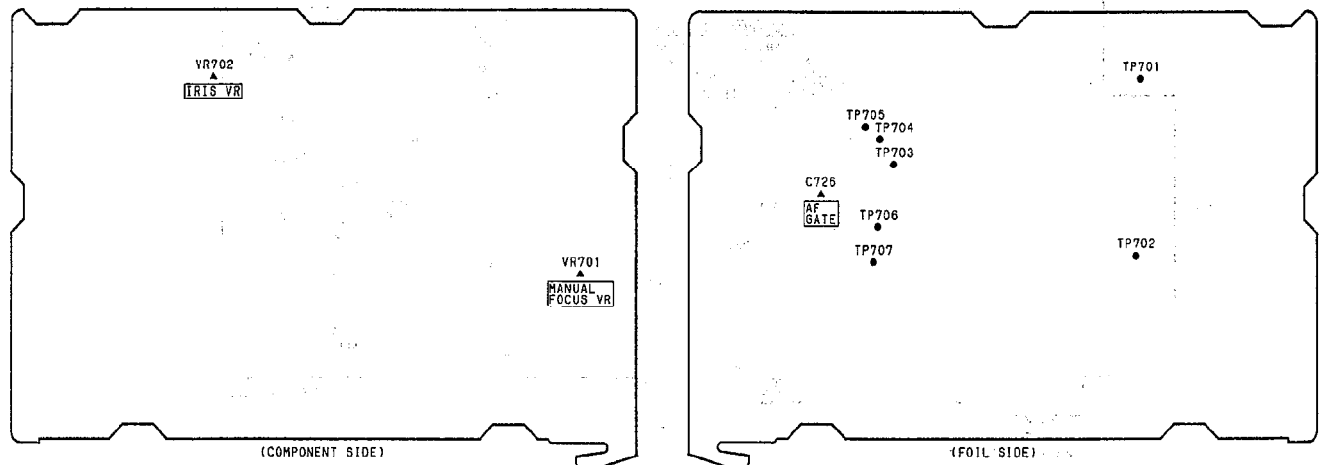
- (1) Aim the camera at gray scale chart.
- (2) Adjust the brightness control (VR804) so that the black and white bars in the EVF screen are the same as they are in the monitor TV screen.

LOCATION OF TEST POINTS & CONTROLS (1)

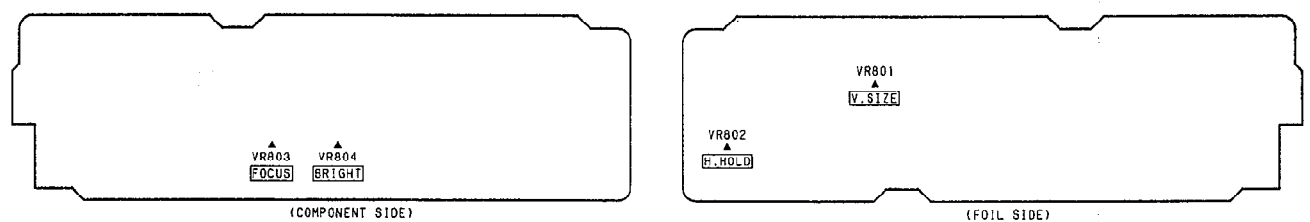
PROCESS C.B.A.



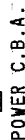
AUTO FOCUS C.B.A.



E.V.F C.B.A



MAIN C.B.A.



2-50

TEST EQUIPMENT AND TOOLS

TEST EQUIPMENT AND TOOLS

The following equipment is required for adjustment of the VTR section of S-VHS-C Movie.

1. VTVM (Vacuum Tube Volt Meter)
DVM (Digital Volt Meter)
Voltage Range : 0.01~50V
2. Dual Trace Oscilloscope
Voltage Range : 0.06~50V/div
Frequency Range : 0~50MHz
Probe : 10:1 or 1:1
3. Frequency counter
Frequency Range : 0~10MHz
4. Signal Generator (Sinewave)
Frequency Range : 0~10MHz
5. Video Sweep Generator
Frequency Range : 0~106MHz
6. Colour Monitor TV
7. Plastic Trip Driver
8. S-C Alignment Tape (VF8180HUP?)
9. S-VHS-C Blank Tape
10. VHS-C Blank Tape
11. Pattern Generator
12. Vectorscope

PREPARATION

1. Remove the casing panels
(Refer to the disassemble method)
2. Connect the extension cable if necessary:
VFK0621 P-002-P3002
VFK0620 PF001-P3001
VFK0622 B-005-P3004
VFK0622 B-004-P3003

Connecting Point
(Test Point)
o' Measuring
Equipment

TAPE	M. EQ.	OSCILLO-SCOPE	SPEC.	MODE	INPUT
TP2001 TP2002				SELF RECORDING	VIDEO SIGNAL
BLANK TAPE					

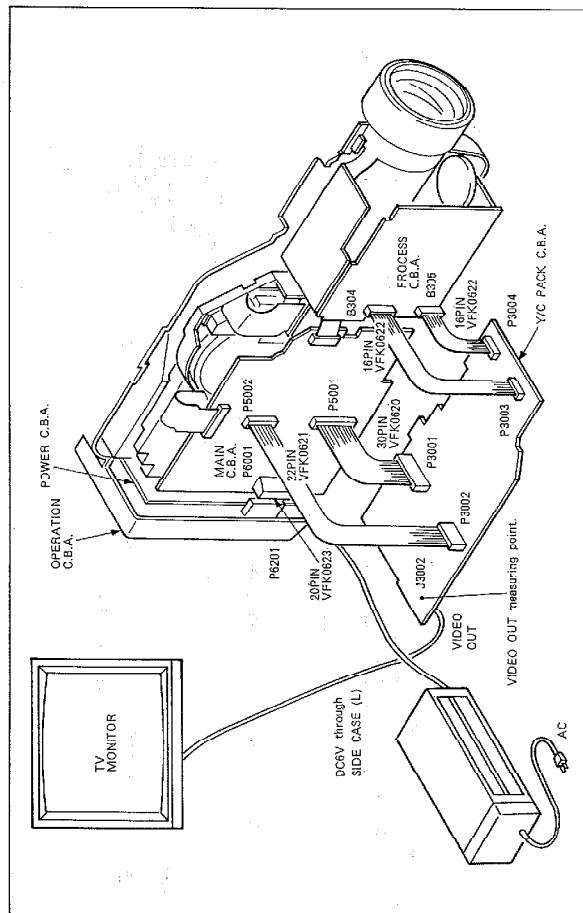
Measuring Equipment	Specification for Adjustment
1. Measuring Equipment 2. Specification for Adjustment	1. Measuring Equipment 2. Specification for Adjustment

Tape for the
adjustment
Example : VFM
use alignment
VFM8180HUPH

**Tape for the
adjustment**
Example : VFMB180HUFP
use alignment tape
VFMB180HUFP

**Supply a Video
Signal to the VIDEO IN
Using Y/C Separator**

Note: If  appears in any block, this means it is not used or not important.

Fig. V1
2-51

FOR TRIGGERING OF THE OSCILLOSCOPE

To trigger the Oscilloscope, the following test point is used

H. rate : J3002 (video output)

V. rate : TP2001 (Head Switching signal)

Note:

Before the electrical adjustment, set the Unit as following conditions except for especial instructions in each adjustment item.

1. Tape Speed Selector ... SP position.
2. Tracking Control ... Center FIX position.
3. S-VHS System Selector ... Auto position.

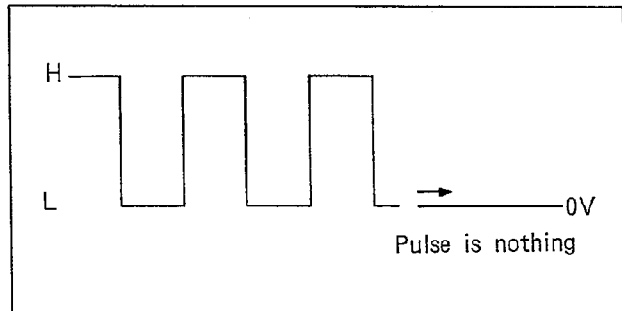


Fig. V2

POWER SECTION

1. REG. 5V ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP8011	VR1001	REC/PLAY	
TAPE	M. EQ.	SPEC.	
BLANK TAPE	D.V.M.	4.80±0.020V	

2. CAMERA 9V ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP8010	VR1003	CAMERA RECORDING	
TAPE	M. EQ.	SPEC.	
BLANK TAPE	D.V.M.	8.6 ^{+0.07V} _{-0.03V}	

3. UNDER CUT ADJUSTMENT

TP	ADJ.	MODE	INPUT
P1005-5	VR6001	REC/PLAY	
TAPE	M. EQ.	SPEC.	
BLANK TAPE	OSCILLOSCOPE/ DC POWER SUPPLY/ D.V.M.		

Note:

Do not connect AC Adaptor, connect a DC Power Supply to pin 5 (+) and pin 1 (-) of P1005, then supply the voltage 5.65±0.05V.

1. Turn VR6001 until pulse train becomes nothing, (When just pulse train is nothing, stop it.)

SERVO SECTION

4. PG SHIFTER ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP3006 VIDEO OUT (J3002)	VR2001	PLAY	
TAPE	M. EQ.	SPEC.	
ALIGNMENT TAPE (VFM8180HUPF)	OSCILLOSCOPE	6.5H±0.5H	

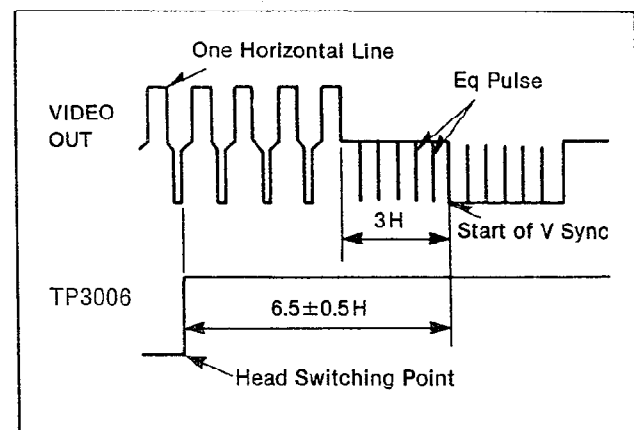


Fig. V3

LUMINANCE & CHROMINANCE SECTION

5. E-E LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIDEO OUT (J3002)	VR3004	S-VHS STOP	COLOUR BAR
TAPE	M. EQ.	SPEC.	
	OSCILLOSCOPE	$A=1.0\pm0.05V_{p-p}$	

Note:

Video out should be terminated with 75 ohm or should be connected with TV

(In case of shooting colour bar by camera)

1. Aim the camera at colour bar chart.
2. Connect the oscilloscope to video output. (J3002)
3. Adjust the VR3004 so that Y output (White portion of colour bar) becomes $1.0\pm0.05V_{p-p}$.

(In case of use of pattern generator)

1. Connect the jumper wire between TP3010 and TP3005.
2. Supply the Y signal of pattern generator to TP3011.
3. Adjust the VR3004 so that level becomes $1.0\pm0.05V_{p-p}$.

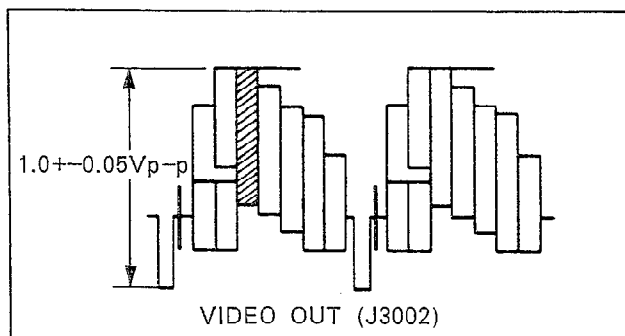


Fig. V4

6. SUB EMPHASIS/LIMITER BALANCE ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP3003	VR3003	S-VHS STOP	
TAPE	M. EQ.	SPEC.	
	D.V.M.	$3.2\pm0.1V$	

7. AFC ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP8006	VR8010	S-VHS STOP	
TAPE	M. EQ.	SPEC.	
	FREQ. COUNTER	$625\pm7.5kHz$	

Note:

Set the S-VHS/VHS selector to S-VHS.

1. Connect the jumper wire between TP3005 and TP8007.
2. Connect the frequency counter to TP8006.
3. Adjust the VR8010 so that frequency become $625\pm7.5kHz$.

8. MAIN BM CARRIER LEAK ADJUSTMENT

TP	ADJ.	MODE	INPUT
FL8001-PIN 3	VR8009	S-VHS STOP	VIDEO SWEEP SIGNAL
TAPE	M. EQ.	SPEC.	
	OSCILLOSCOPE/VIDEO SWEEP	SIGNAL IS MINIMIZED	

Note:

Before this adjustment, AFC Adjustment must be completed.

1. Set the Sweep generator output as shown below.

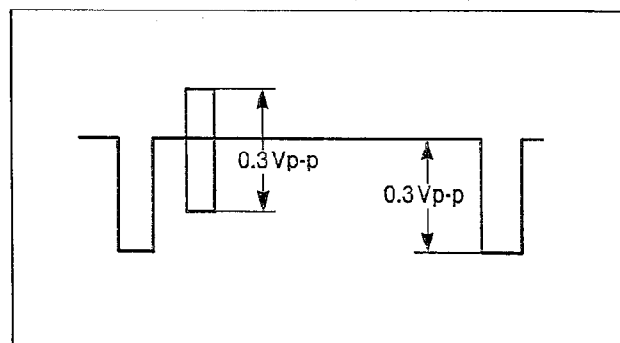


Fig. V5

2. Connect the jumper wire between TP3010 and TP3005(REG 5V). And connect the jumper wire between TP8012 and TP3005(REG 5V).
3. Connect the Oscilloscope to FL8001 Pin 3.
4. Supply the Sweep signal to TP3011 and TP8013.
5. Adjust the VR8009 so that signal "A" is minimized. (No Color beat on TV Screen).

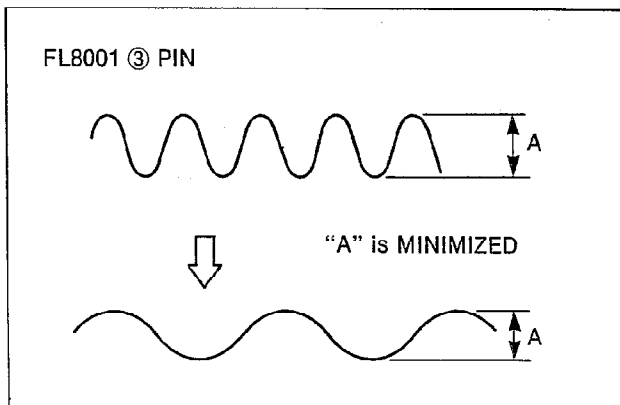


Fig.V6

9. S-VHS MODULATOR LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP3002	VR3006	S-VHS STOP	COLOUR BAR
TAPE	M. EQ.	SPEC.	
	OSCILLOSCOPE	$0.35 \pm 0.01V_{p-p}$	

(In case of shooting colour bar by camera)

1. Aim the camera at colour bar.
2. Connect the oscilloscope to TP3002.
3. Adjust the VR3005 so that signal level becomes $0.35 \pm 0.01V_{p-p}$.

(In case of use of signal generator)

1. Connect the jumper wire between TP3010 and TP3005.
2. Supply the Y signal of colour bar to TP3011.
3. Adjust the VR3005 so that signal level becomes $0.35 \pm 0.01V_{p-p}$.

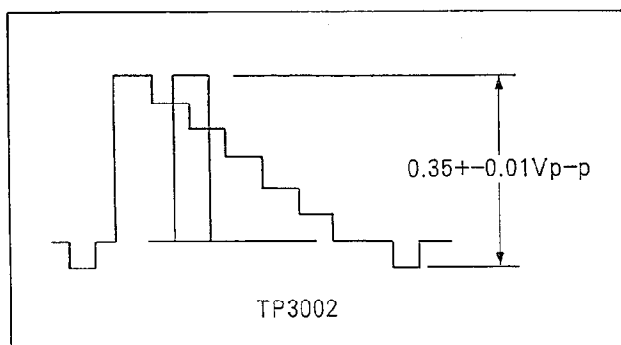


Fig. V7

10. COLOUR 90° AND 270° ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIDEO OUTPUT	VR8050 VR8008	S-VHS STOP	COLOUR BAR
TAPE	M. EQ.	SPEC.	
	VECTOR-SCOPE	SHOWN IN FIG. V8	

1. Connect the jumper wire through capacitor (10V, 47uF) between P3003-4(or TP310 on the Process board) and GND in order to eliminate the B-Y signal.
2. Supply video out signal to vectorscope.
3. Aim the camera at colour bar chart.
4. Adjust the VR8050 so that signal comes to R-Y axis as shown Fig.V8.
5. Connect the jumper wire through capacitor (10.47uF) between P3003-3(or TP311 on the Process Board) and GND in order to eliminate the R-Y signal.
6. Adjust the VR8008 so that signal comes to B-Y axis as shown Fig.V8.

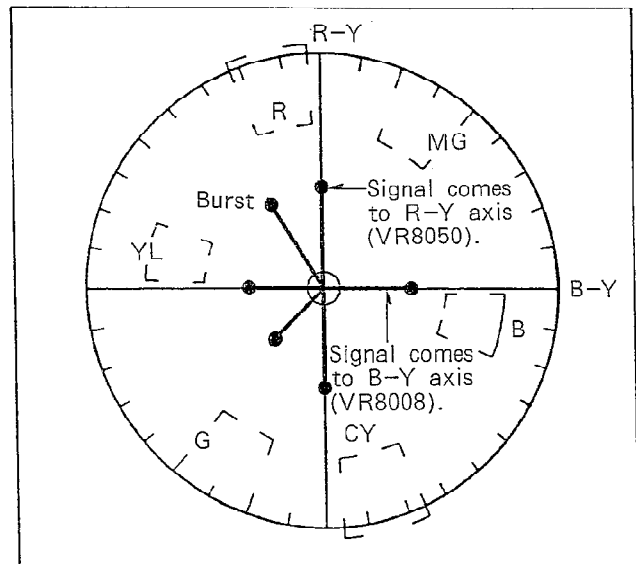


Fig. V8

11. BURST LEVEL AND PHASE ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIDEO OUT	VR8004 VR8005	STOP	COLOUR BAR
TAPE	M. EQ.	SPEC.	
	OSCILLOSCOPE VECTOR-SCOPE	BURST = $300 \pm 30mV_{p-p}$	

1. Connect the jumper wire through capacitor (10V, 47uF) between P3003-3 and GND in order to eliminate the R-Y signal.
2. Aim the camera at colour bar.
3. Supply the video out to vector scope.
4. Adjust the VR8004 so that burst vector is aligned with other colour vectors.
5. Connect the video output to oscilloscope.
6. Adjust the VR8005 so that burst level becomes $300 \pm 30mV_{p-p}$.

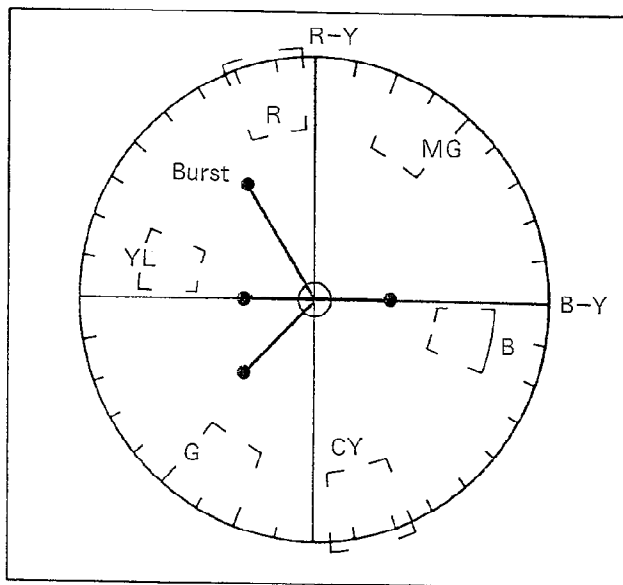


Fig. V9

12. RECORDING CURRENT ADJUSTMENT

12-1. REC CHROMA LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP5004 (HOT) TP5005 (GND)	VR8001	S-VHS REC/PLAY (SP)	COLOUR BAR
TAPE	M. EQ.	SPEC.	
S-VHS BLANK TAPE	OSCILLO- SCOPE	25±2mVp-p	

1. Set the unit to S-VHS mode.
2. Connect the oscilloscope to TP5004 (HOT) and TP5005 (GND).
3. Aim the camera at colour bar.
4. Make recording with SP mode.
5. Eliminate luminance signal by turning VR3001.
6. Adjust the VR8001 so that chroma level become 25±2mvp-p.

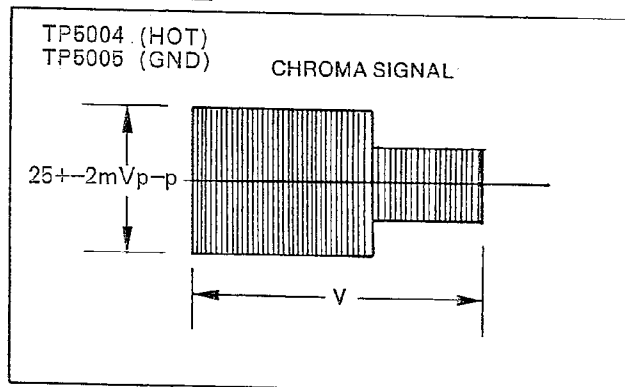


Fig. V8

12-2. LUMINANCE RECORDING CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP5004 (HOT) TP5005 (GND)	VR3001	S-VHS REC/PLAY (SP)	VIDEO SIGNAL
TAPE	M. EQ.	SPEC.	
S-VHS BLANK TAPE	OSCILLO- SCOPE	110±5mVp-p	

1. Set the unit to S-VHS mode.
2. Connect the oscilloscope to TP5004 (HOT) and TP5005 (GND).
3. Aim the camera at colour bar.
4. Make recording with SP mode.
5. Adjust the VR3001 so that luminance level becomes 110±5mVp-p.

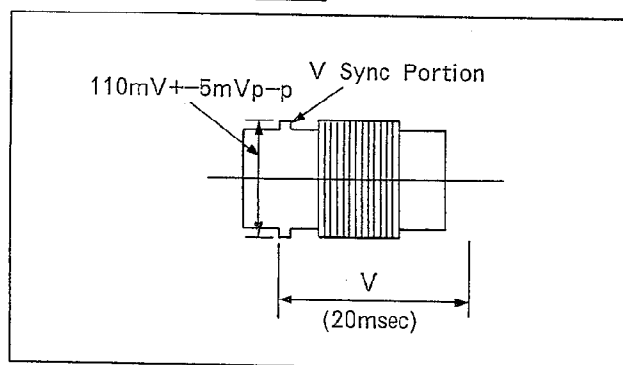


Fig. V11

13. 4.43MHz ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP8008	VR8097	STOP	
TAPE	M. EQ.	SPEC.	
	FREQ. COUNTER	4.433619MHz±150Hz	

1. Adjust VR8097 so the reading of frequency counter is 4.433619MHz ± 150Hz.

14. CNR ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP8003	VR8006 VR8007	SELF RECORDING (S-VHS MODE)	COLOUR BAR
TAPE	M. EQ.	SPEC.	
S-VHS BLANK TAPE	OSCILLO- SCOPE	Less than 250mVp-p	

1. Aim the camera at colour bar chart.
2. Set the unit to S-VHS mode and REC. PLAY with SP mode.
3. Connect the oscilloscope to TP8003.
4. Play back the just recorded portion.
5. Adjust the VR8006 and VR8007 so that signal "A" is minimized.

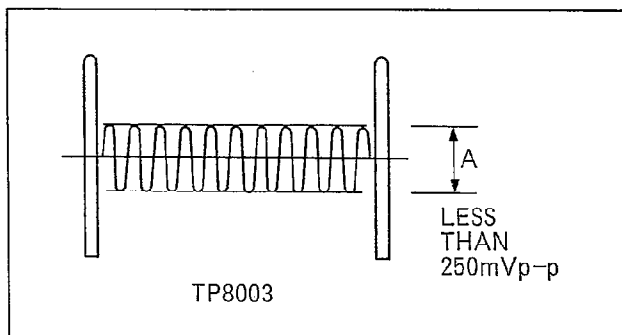


Fig. V12

15. YNR ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP3001	VR3002	S-VHS SELF RECORDING	COLOUR BAR
TAPE	M. EQ.	SPEC.	
S-VHS BLANK TAPE	OSCILLOSCOPE	SIGNAL IS MINIMIZED (LESS THAN 100mV)	

1. Aim the camera at colour bar chart.
2. Record it with S-VHS SP mode.
3. Connect the oscilloscope to TP3001.
4. Play back just recorded portion.
5. Adjust VR3002 so that signal is minimized.

16. S-VHS VIDEO PLAYBACK LEVEL ADJUSTMENT <S-VHS MODE>

TP	ADJ.	MODE	INPUT
VIDEO OUT	VR3007	S-VHS SELF RECORDING	COLOUR BAR
TAPE	M. EQ.	SPEC.	
S-VHS BLACK TAPE	OSCILLOSCOPE	A: $1.0 \pm 0.05V_{p-p}$ B: $0.5 \pm 0.15V_{p-p}$	

1. Connect the jumper wire between TP3010 and TP3005.
2. Supply the Color Bar signal of pattern generator to TP3005.
3. Record it for while with S-VHS SP mode.
4. Connect the oscilloscope to TP3001.
5. Play back just recorded portion.
6. Adjust VR3007 so that signal level become $A=1.0 \pm 0.05V_{p-p}$, $B=0.5 \pm 0.15V_{p-p}$.

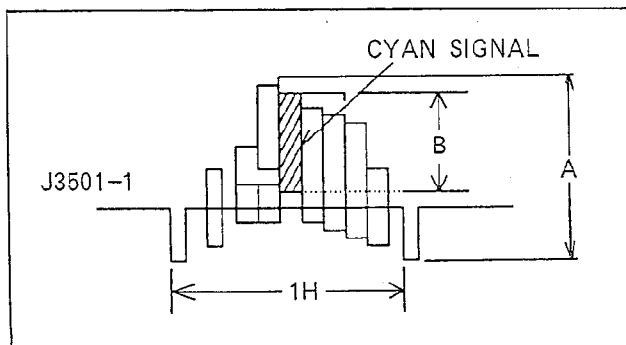


Fig. V13

17. HEAD AMP FREQUENCY RESPONSE ADJUSTMENT FOR S-VHS MODE

TP	ADJ.	MODE	INPUT
S OUT (J3001)	VR5001	S-VHS SELF RECORDING (SP)	VIDEO SWEEP SIGNAL
TAPE	M. EQ.	SPEC.	
S-VHS BLANK TAPE	VIDEO SWEEP/ OSCILLOSCOPE	$A = -6 \pm 1dB$ (56~71%)	

Note:

Edit switch must be off.

1. Set the sweep generator output as shown below.

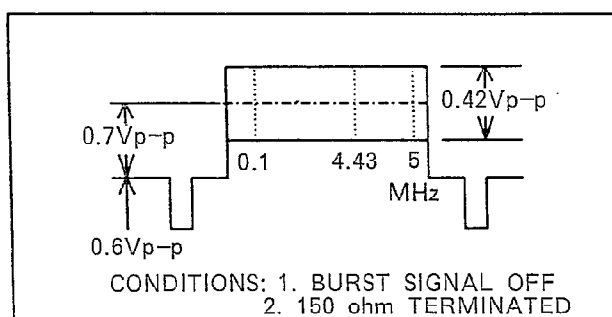


Fig. V14

2. Set the unit to S-VHS mode.
3. Connect the jumper wire between TP3010 and TP3005.
4. Supply sweep signal to TP3011.
5. Record it for a while.
6. Play back just recorded portion.
7. Adjust VR5001 so that so that level at 4MHz is within spec. as shown in Fig. V15.

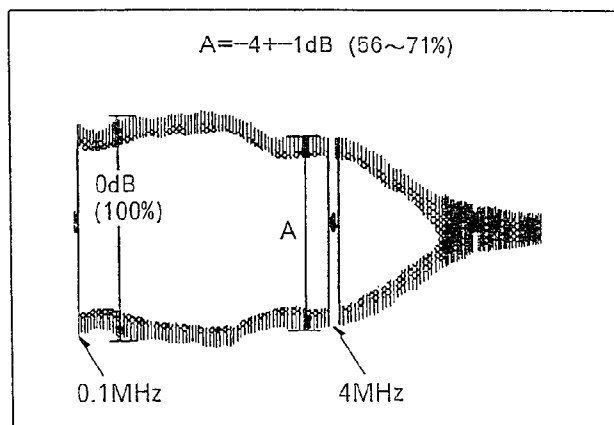


Fig. V15

18. HEAD AMP FREQUENCY RESPONSE ADJUSTMENT FOR VHS MODE

TP	ADJ.	MODE	INPUT
LINE OUT	VR5002	VHS SELF RECORDING (SP)	VIDEO SWEEP SIGNAL
TAPE	M. EQ.	SPEC.	
VHS BLANK TAPE	VIDEO SWEEP/ OSCILLOSCOPE	$A=0\pm 1\text{ dB}$ (56~71%)	

Note:

Edit switch must be off.

- Set the sweep generator output as shown below.

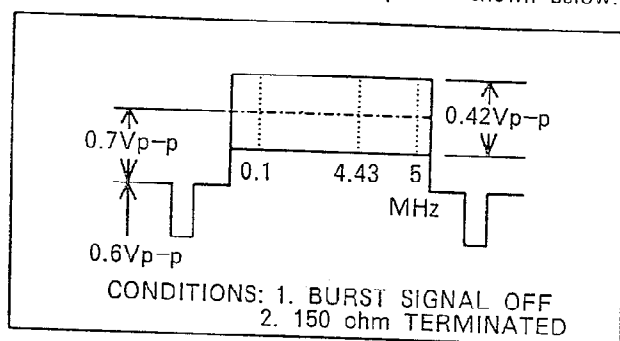


Fig. V16

- Set the unit to VHS mode.
- Connect the jumper wire between TP3010 and TP3005.
- Supply sweep signal to TP3011.
- Record it for a while.
- Play back just recorded portion.
- Adjust VR5002 so that so that level at 2MHz is within spec. as shown in Fig. V17.

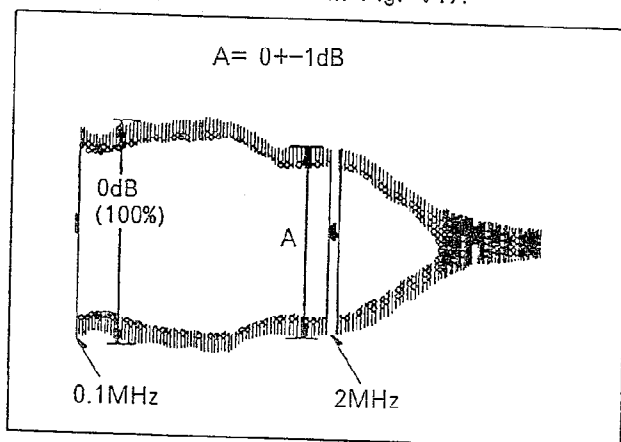


Fig. V17

AUDIO SECTION

19. AUDIO BIAS CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP4001 (HOT) TP4002 (GND)	VR4002	REC/PLAY	
TAPE	M. EQ.	SPEC.	
BLANK TAPE	D.V.M.	$2.7\text{ mVrms} \pm 0.1\text{ mVrms}$	

20. AUDIO PLAYBACK LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
LINE OUT (J3003)	VR4001	VHS SELF RECORDING	1kHz AUDIO -70dB SIGNAL/ VIDEO SIGNAL
TAPE	M. EQ.	SPEC.	
BLANK TAPE	SIGNAL GENERATOR/D.V.M.	EE LEVEL = $-8.0 \pm 2\text{ dB}$ PB LEVEL = $\text{EE LEVEL} \pm 0.5\text{ dB}$	

Note:

Audio select SW should be normal

- Supply the audio signal (1KHz/-70dB sine-wave) to audio circuit through the MIC Input Jack.
- Set the audio select SW to Normal position.
- Adjust VR4001 so that the level is EE Level ($-8\pm 2\text{ dB}$) $\pm 0.5\text{ dB}$.

HI-FI AUDIO SECTION

21. HI-FI AUDIO RECORDING CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP5003 (HOT) TP5005 (GND)	VR4506	S-VHS RECORDING	
TAPE	M. EQ.	SPEC.	
S-VHS BLANKTAPE	OSCILLOSCOPE	$220 \pm 5\text{ mVp-p}$	

- Connect the OSCILLOSCOPE to TP5003 (HOT) and TP5005 (GND).
- Adjust VR4506 so that the Audio recording current become $220\pm 5\text{ mVp-p}$ as shown below.

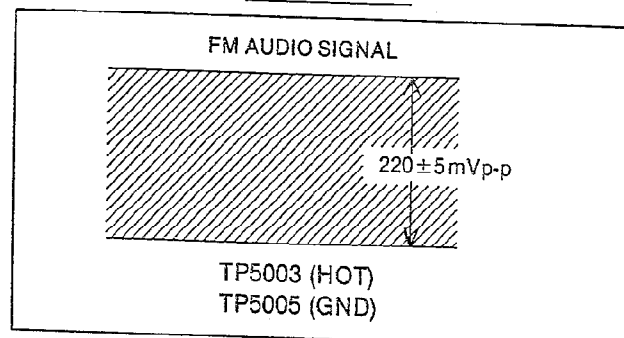


Fig. V18

22. AUDIO MUTING ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP4507	VR4505	SELF RECORDING	1kHz, -10dB (316rms) AUDIO SIG.
TAPE	M. EQ.	SPEC.	
BLANK TAPE	OSCILLOSCOPE	DC LEVEL=2V	

Note1

Before this adjustment, Tape interchangeability Adjustment must be always completed.

Note2

To achieve this adjustment, the luminance recording current adjustment should be performed as follows.

First connect the oscilloscope to TP5004 (HOT) and TP5005 (GND) and then adjust VR3005 for 115mVp-p (refer to Luminance Recording Current Adjustment [Item: 11-2]).

After this adjustment, the luminance recording current must be returned to original position again.

1. Set the Audio Select SW to "STEREO" position.
2. Play back the just recorded portion.
3. Connect the oscilloscope to TP4507.
4. Preadjust VR4505 until the DC voltage is changed into low level (Approx. 0V) at TP4507.
5. Then slowly adjust VR4505 so that the DC voltage comes at 2V as shown below.

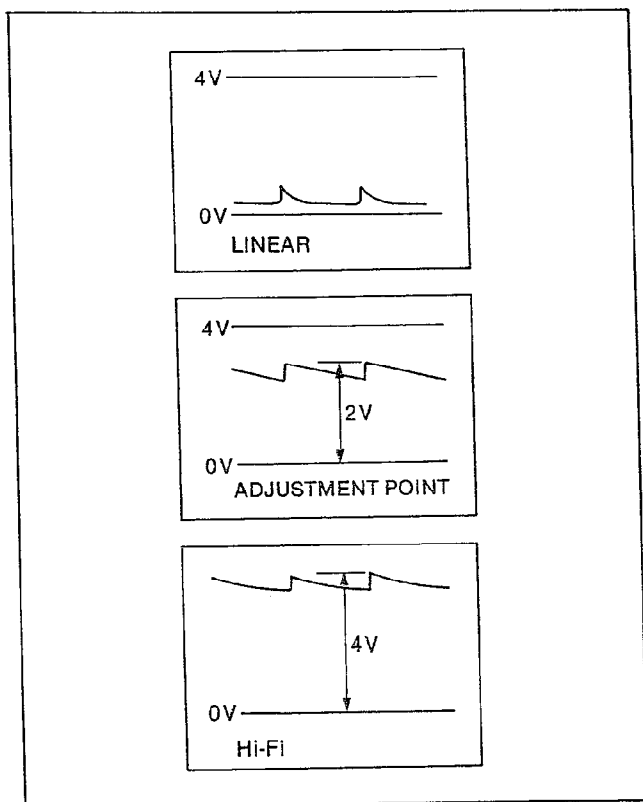


Fig.V19

23. HI-FI AUDIO CARRIER FREQUENCY ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP4505	VR4503 (L) VR4504 (R)	STOP	
TAPE	M. EQ.	SPEC.	
	FREQUENCY COUNTER	1400±10kHz (L) 1800±10kHz (R)	

24. AUDIO DEVIATION ADJUSTMENT

TP	ADJ.	MODE	INPUT
IC4501-48 (L) IC4501-2 (R)	VR4501 (L) VR4502 (R)	REC. PLAY	1kHz, -70dB (30mVp-p) AUDIO SIGNAL
TAPE	M. EQ.	SPEC.	
BLANK TAPE	SIGNAL GENERATOR/ D.V.M.	160mVp-p	

1. Set the output (600-ohm Terminated) of the Signal Generator to 1kHz and -30dB(30mVp-p), and supply it through the Mic Input Jack.
2. Adjust the VR4501 to 160mVp-p at IC4501-48 on HiFi Audio C.B.A. for L-Channel.
3. Adjust the VR4502 to 160mVp-p at IC4501-2 on HiFi Audio C.B.A. for R-Channel.

NOTE :

Audio signal output(1kHz/-30dB : 30mVp-p) should be terminated by 600-ohm.

25. VITC SIGNAL LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIDEO OUT (J3002)	VR3011	S-VHS REC. PAUSE	GRAY SCALE CHART
TAPE	M. EQ.	SPEC.	
	VITC GENERATOR/ OSCILLOSCOPE	V/S 1.8±0.07 (540±20mVp-p)	

1. Insert the plug of VITC Generator Cord into the Character Generator Terminal.
2. Aim the Camera at Gray Scale Chart.
3. Set the unit to S-VHS Mode and set to recording mode.
4. Adjust the VR3011 so that ratio of V and S becomes 1.8±0.07 as shown below.

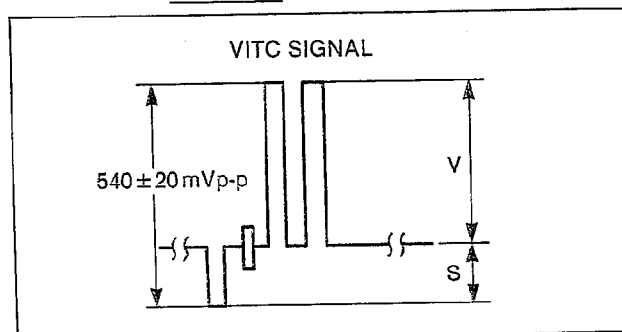
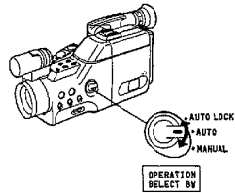


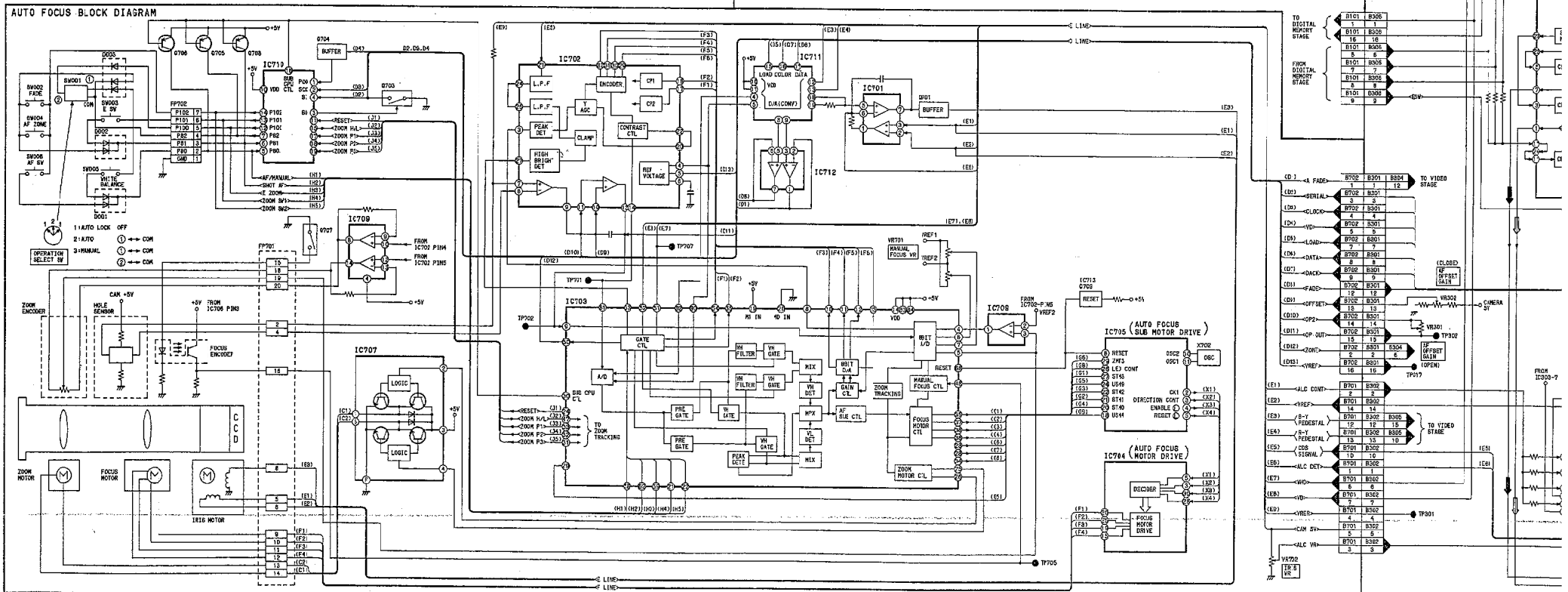
Fig. V20

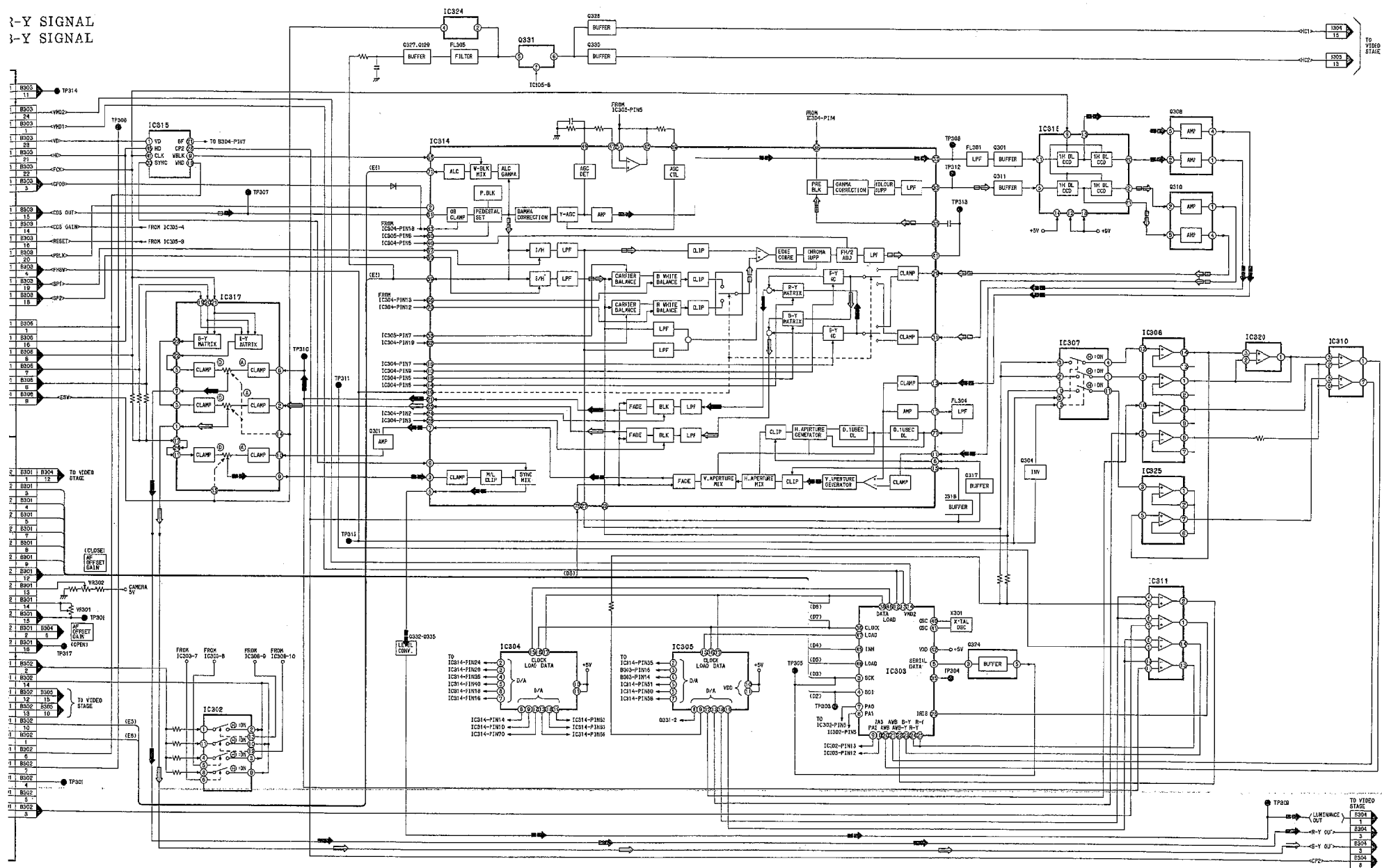
Memo

3-1. PROCESS, SENSOR & AUTO FOCUS BLOCK DIAGRAM

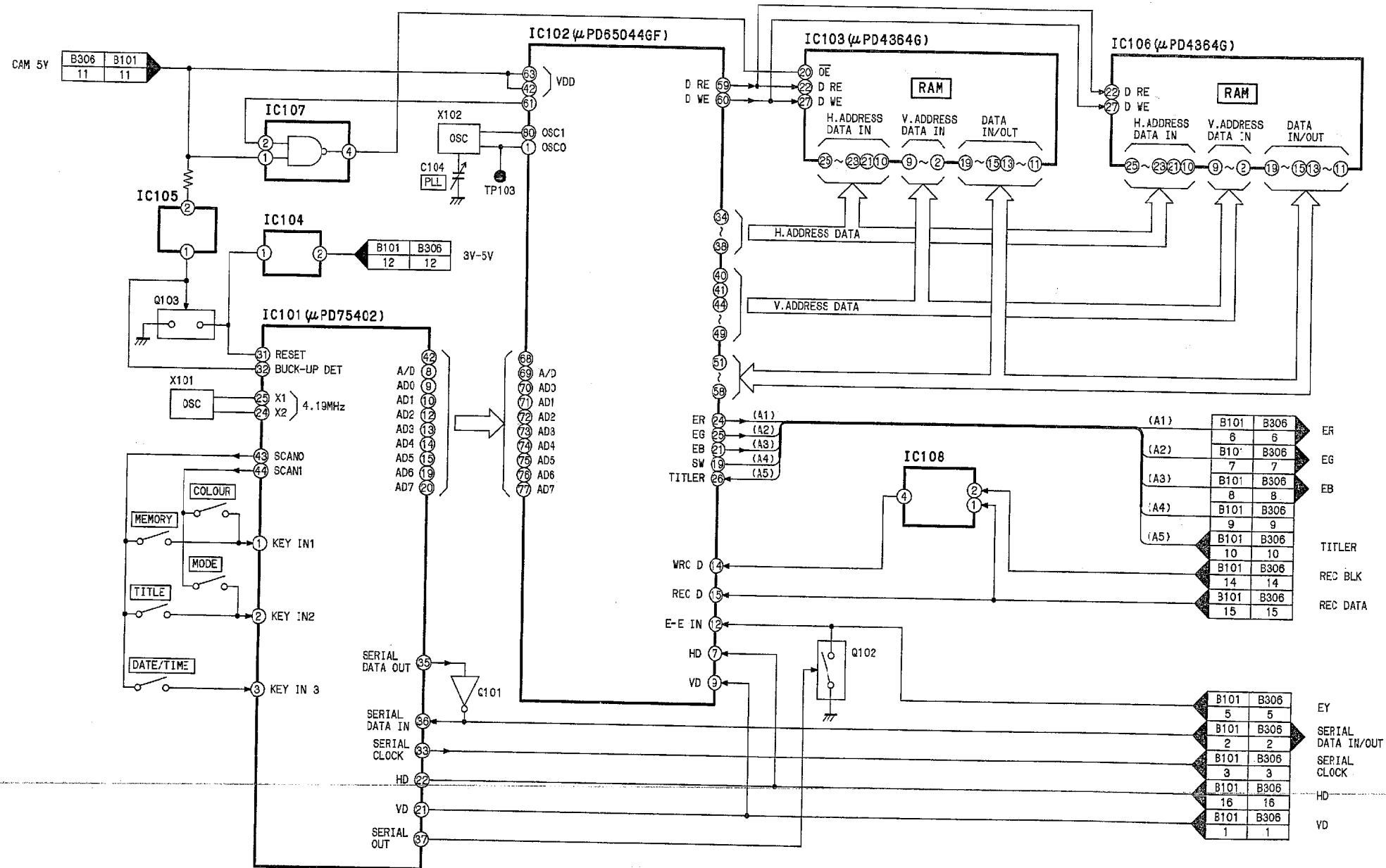


OPERATION BUTTONS	OPERATION SELECTOR SWITCH			
	INITIAL SETTING	MANUAL	AUTO	AUTO LOCK
1 TITLE FUNCTION ON/OFF BUTTON	YES	YES	YES	NO
2 PAUSE BUTTON	YES	YES	YES	NO
3 E/ATE/ME SELECTOR	YES	YES	YES	NO
4 FOCUS ADJUSTING BUTTON MANUAL FOCUS VOLUME	YES	YES (3 STEP ZONES)	NO(AUTO)	NO(AUTO)
5 FISH SPEED SHUTTER SELECTOR	YES (1/500)	YES (1/2500, 1/500, 1/1000)	NO(NORMAL)	NO(NORMAL)
6 IRIS CLOSE/OPEN CONTROL	YES	YES (OPEN → CLOSE)	NO(AUTO)	NO(AUTO)
7 WHITE BALANCE BUTTON	YES	YES	NO(AUTO)	NO(AUTO)
8 REVIEW/REVIEW BUTTON	YES	YES	YES	NO
9 FAST FORWARD/REW. BUTTON	YES	YES	YES	NO

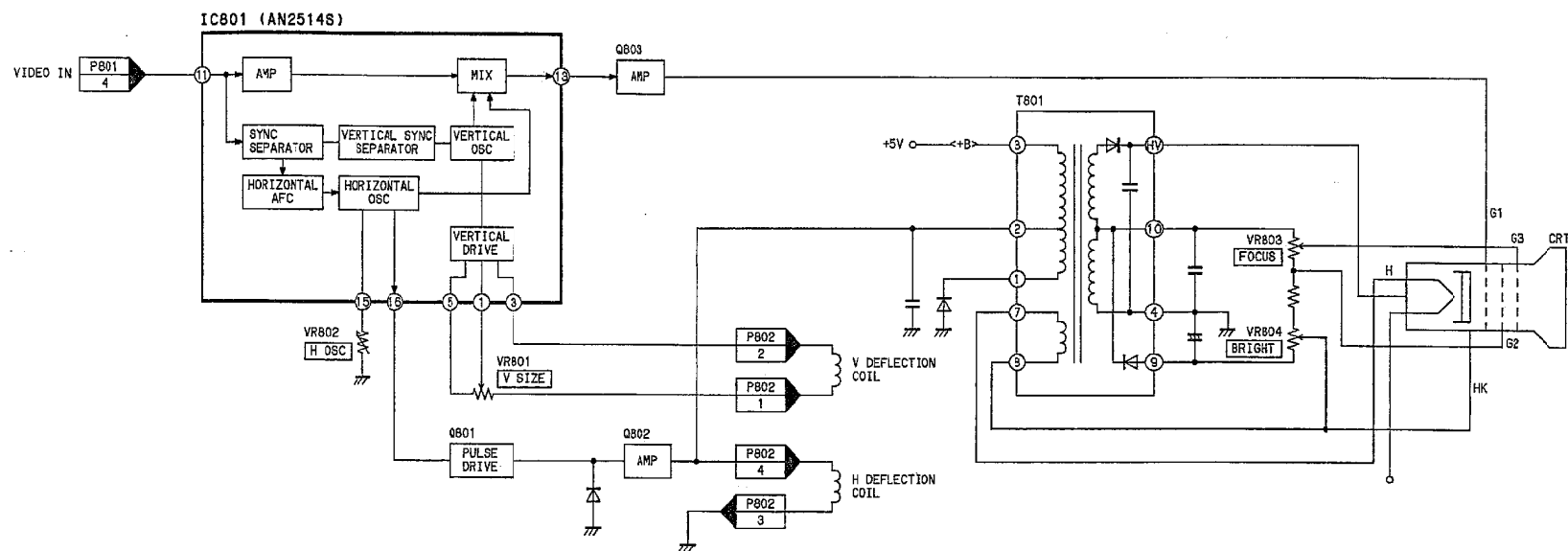


2-Y SIGNAL
3-Y SIGNAL

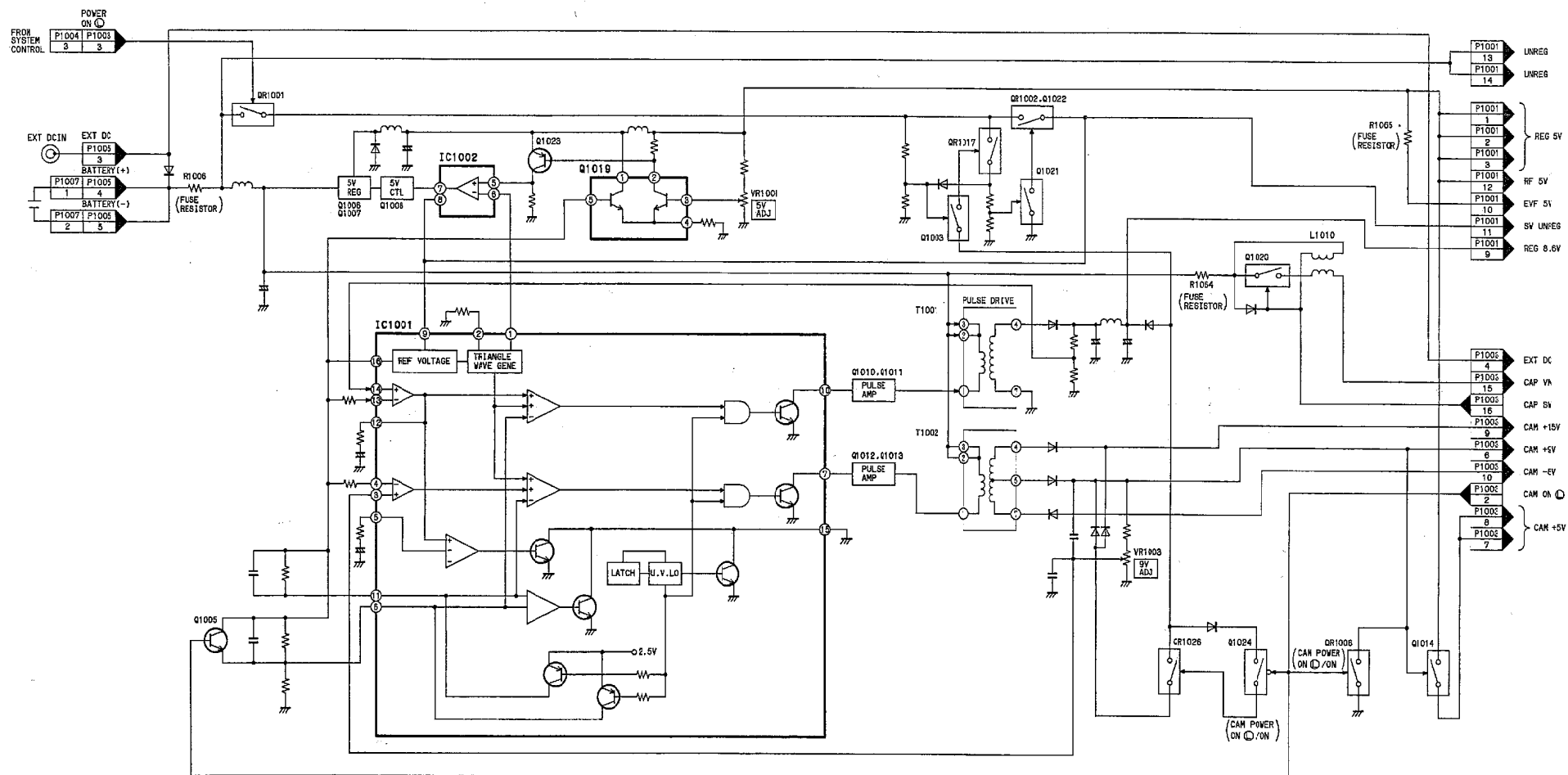
3-2. TITLE MEMORY BLOCK DIAGRAM



3-3 E.V.F BLOCK DIAGRAM



3-4 POWER BLOCK DIAGRAM



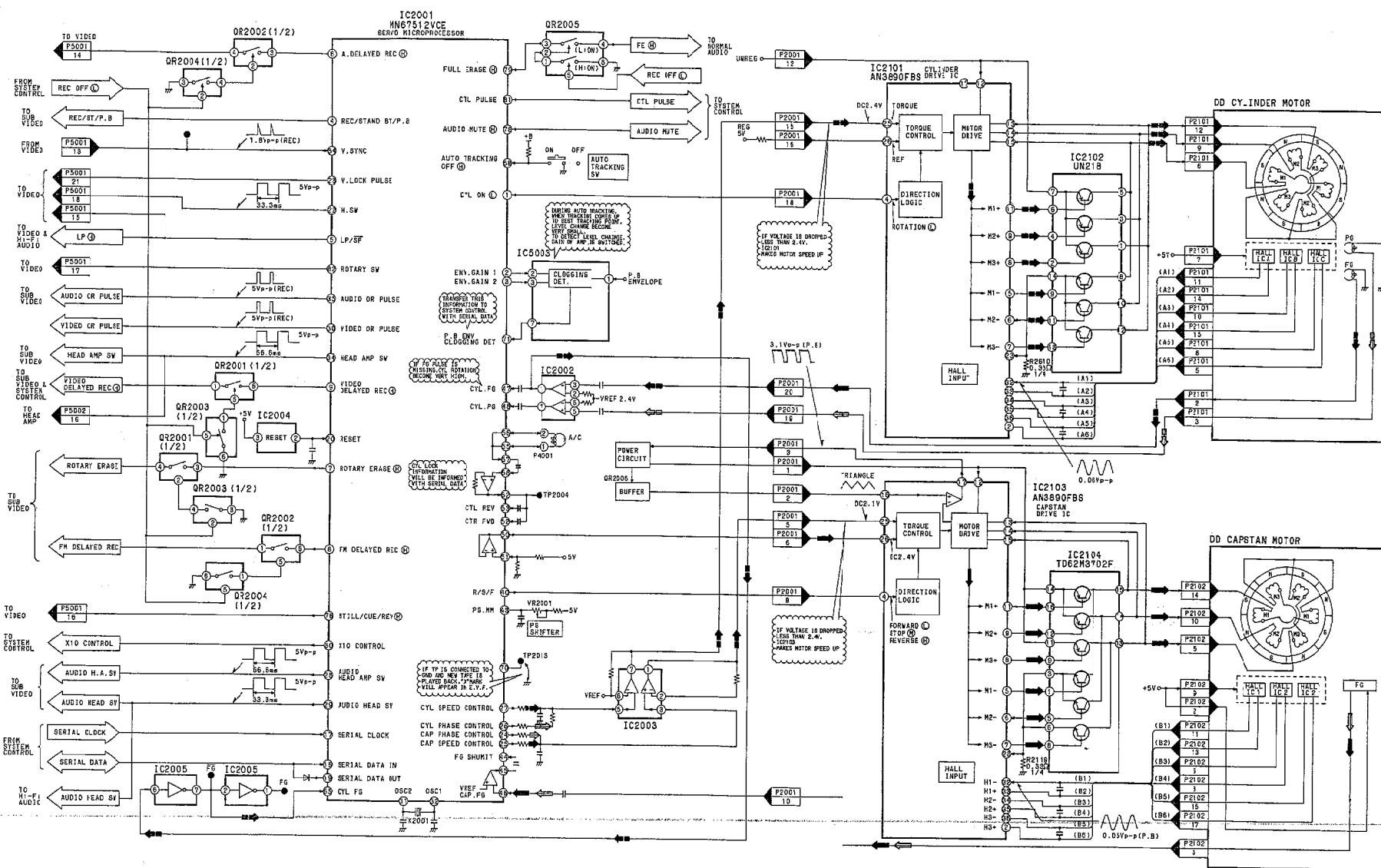
3-5 SERVO BLOCK DIAGRAM

← CAPSTAN SERVO SPEED LOOP

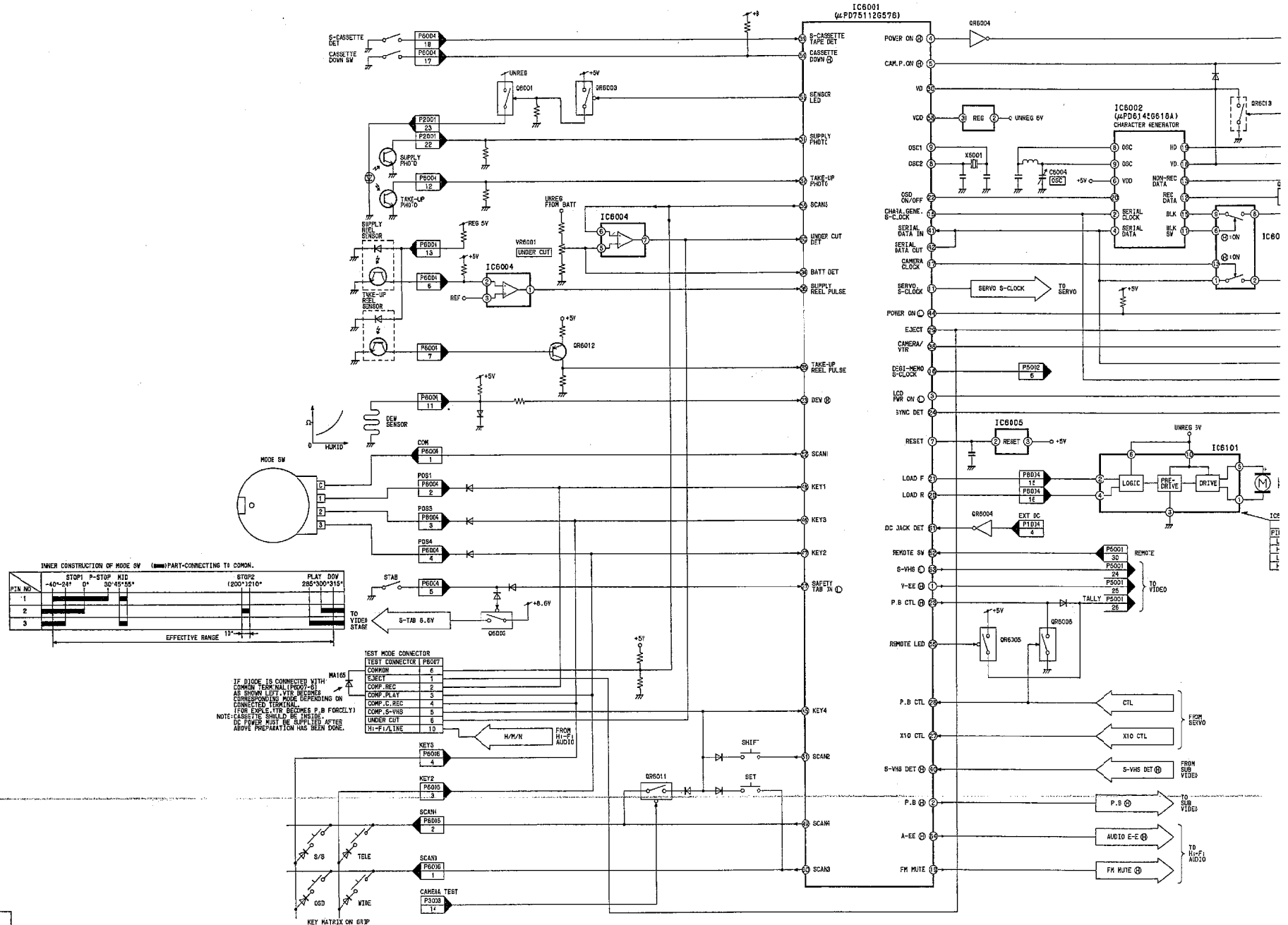
← CAPSTAN SERVO PHASE LOOP

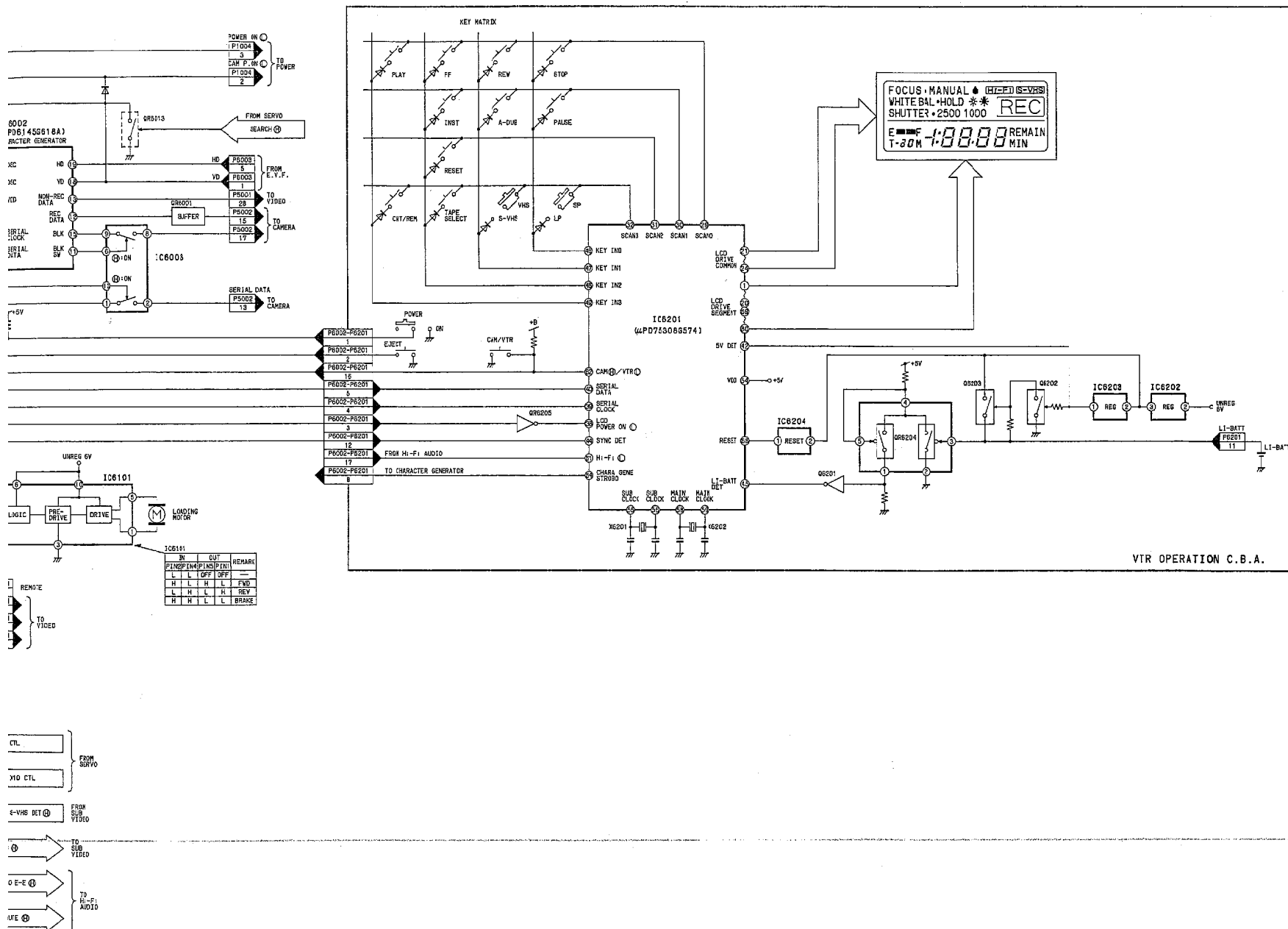
CYLINDER SERVO SPEED LOOP

← CYLINDER SERVO PHASE LOOP



3-6. SYSTEM CONTROL BLOCK DIAGRAM





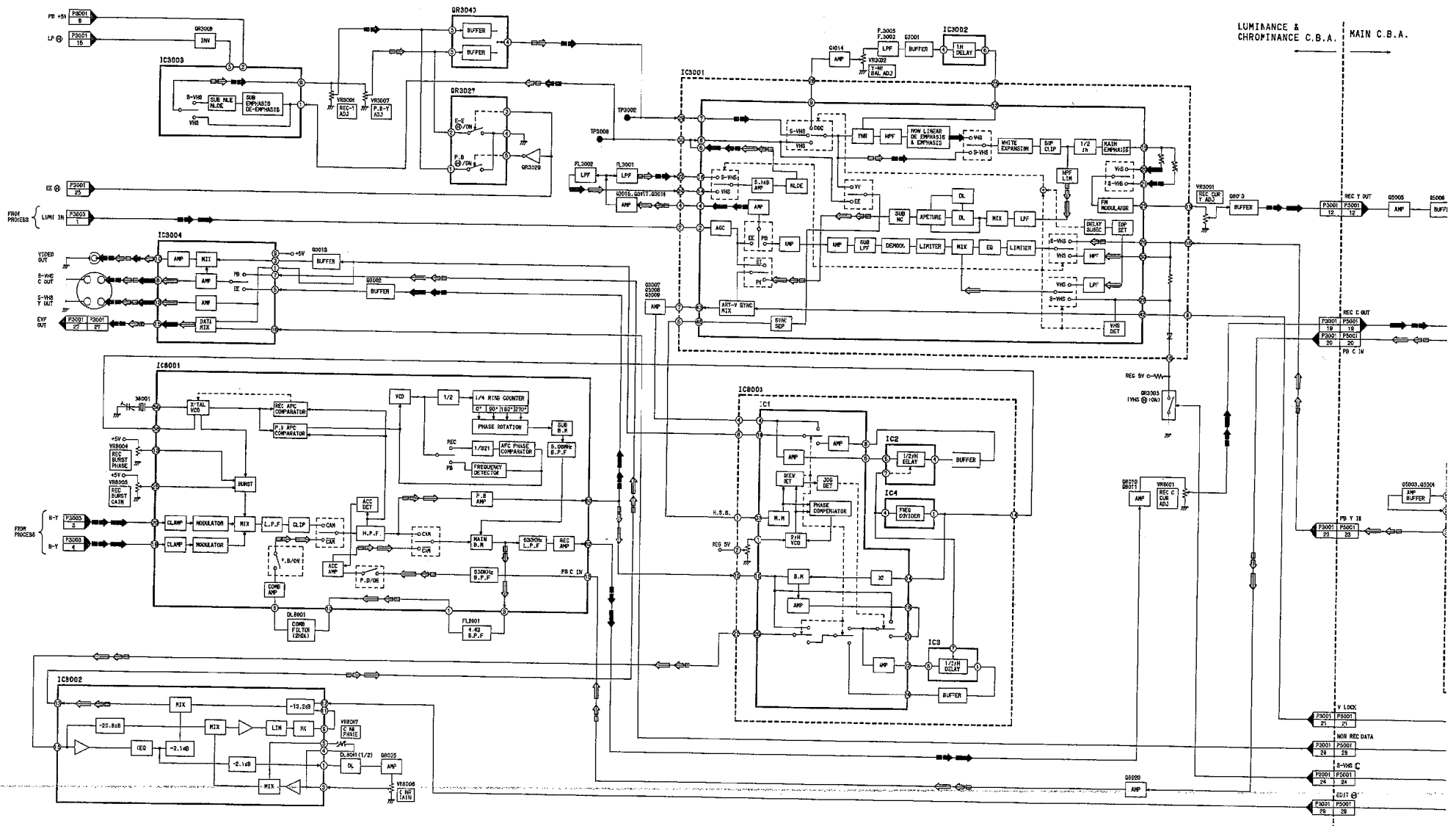
3-7. LUMINANCE & CHROMINANCE BLOCK DIAGRAM

MAIN SIGNAL PATH IN REC MODE (VHS)

MAIN SIGNAL PATH IN REC MODE (S-VHS)

MAIN SIGNAL PATH IN PLAYBACK MODE (VHS)

MAIN SIGNAL PATH IN PLAYBACK MODE (S-VHS)

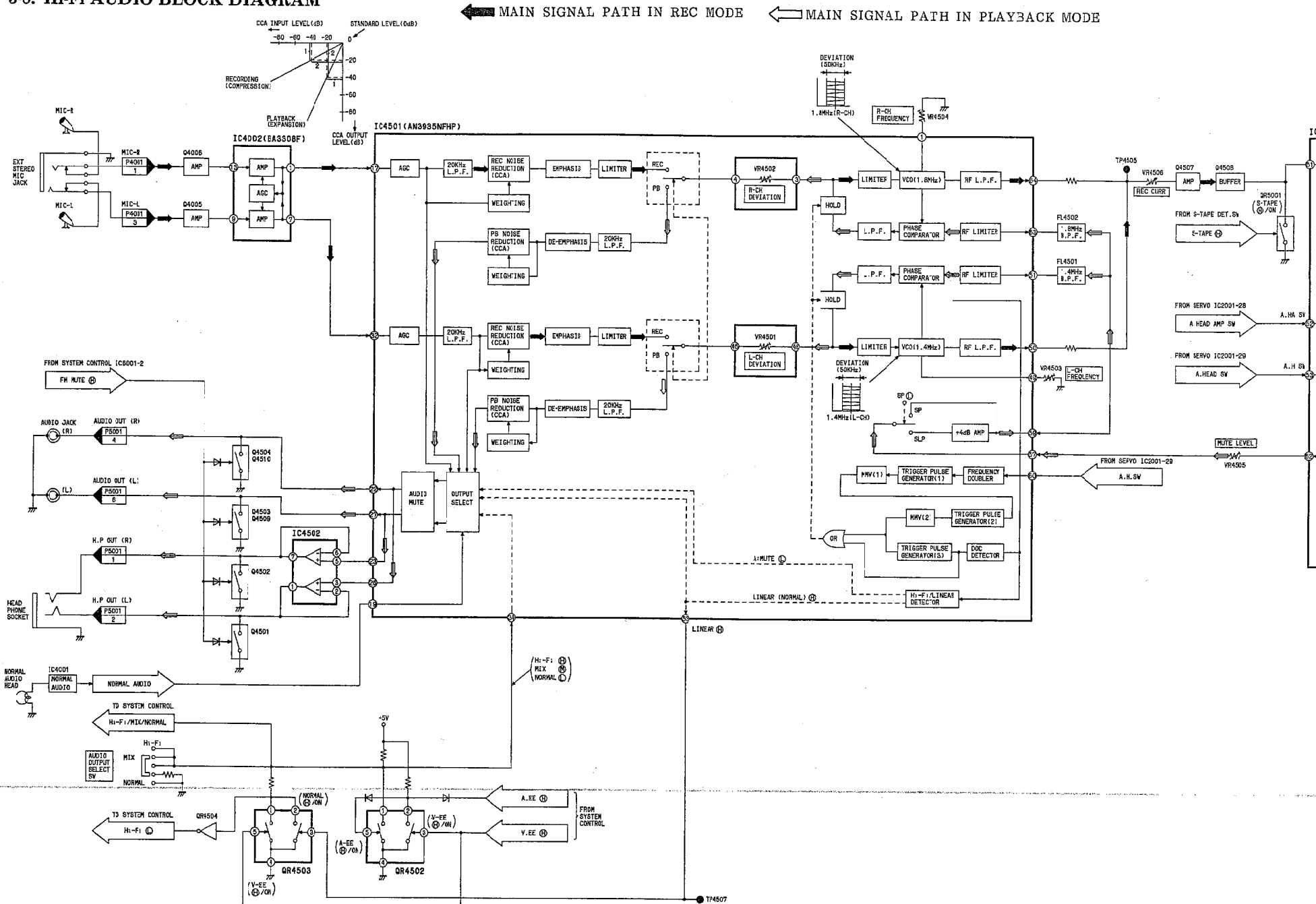


LUMINANCE & CHROMINANCE Section



Next Page:
Hi-Fi AUDIO Section

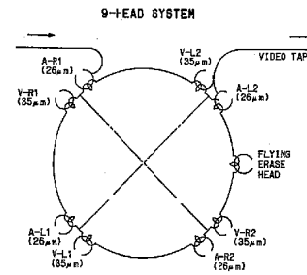
3-8. HI-FI AUDIO BLOCK DIAGRAM



The schematic diagram illustrates the internal circuitry of a 9-head VCR. The input signal (1) is processed through a series of stages including RF L.P.F., RF LIMITER, and various amplifiers (AMP) and buffers. Key components include VR4504, VR4503, and VR4505, as well as IC5001. The output is connected to four heads: R2 HEAD, L1 HEAD, R1 HEAD, and L2 HEAD. A 9-HEAD SYSTEM diagram is also shown, illustrating the arrangement of the heads and the video tape.

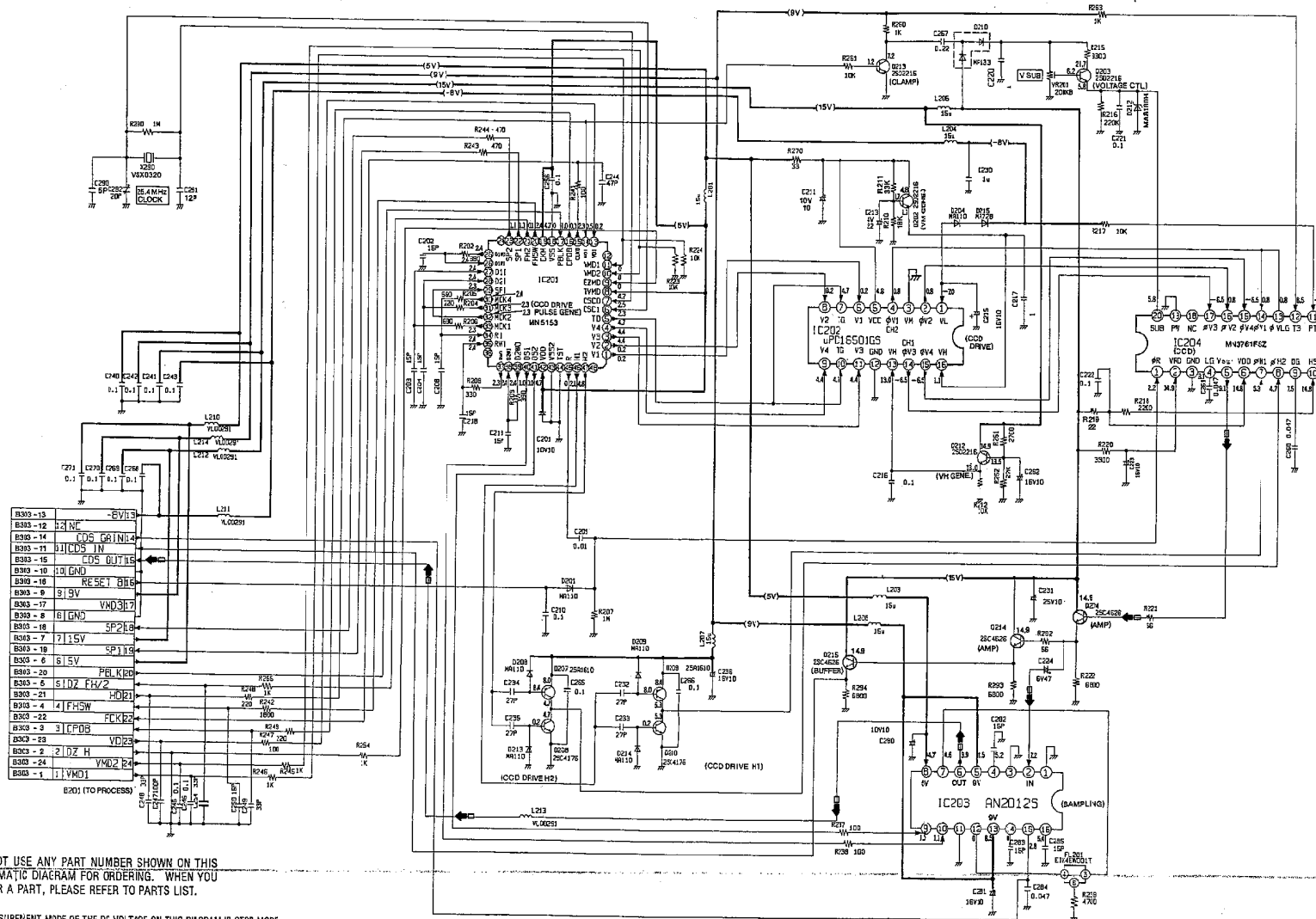
9-HEAD SYSTEM

The diagram shows the arrangement of the heads and the video tape. The heads are labeled A-1, A-2, A-1, A-2, A-1, A-2, A-1, A-2, and A-2. The video tape is labeled VIDEO TAPE. The heads are arranged in a circular pattern, with the video tape running through them. The heads are labeled A-1 (26 μm), A-2 (26 μm), A-1 (26 μm), A-2 (26 μm), A-1 (26 μm), A-2 (26 μm), A-1 (26 μm), A-2 (26 μm), and A-2 (26 μm). The video tape is labeled VIDEO TAPE.



3-9. SENSOR SCHEMATIC DIAGRAM

← PRE VIDEO SIGNAL

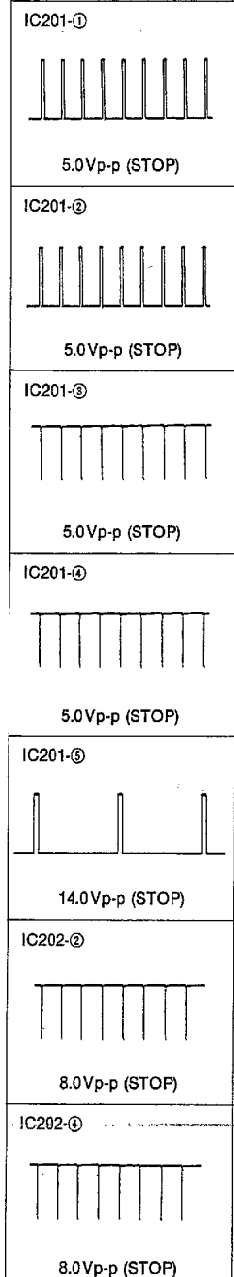


NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

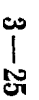
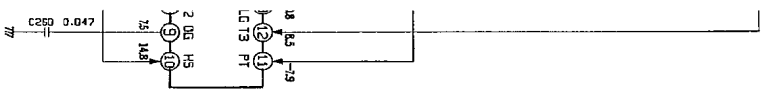
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

NOTE: THE WAVEFORM OF THIS DIAGRAM IS MEASURED WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

SENSOR CIRCUIT WAVEFO

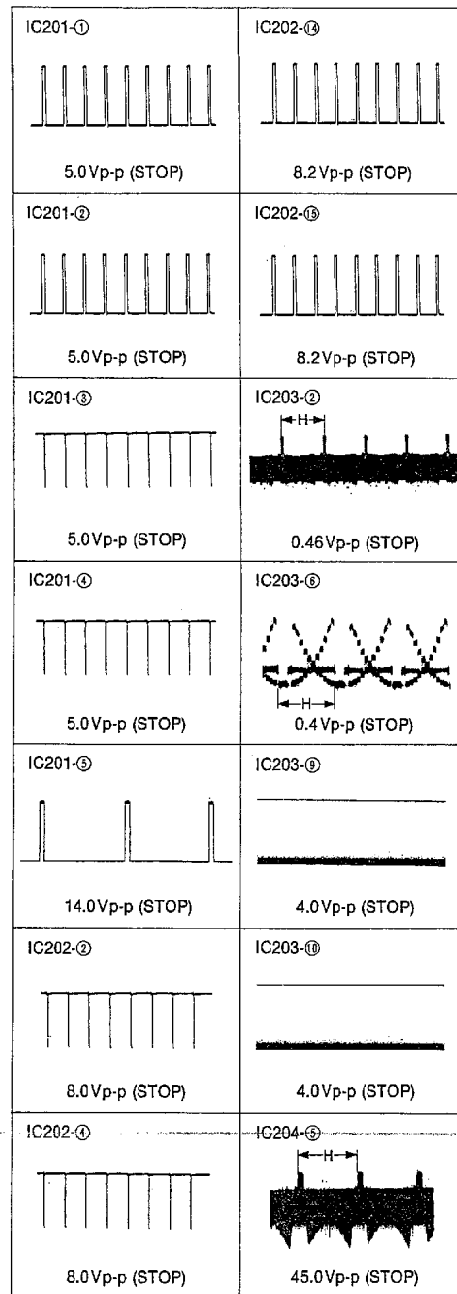


3-10. SENSOR C.B.A. (VEP220

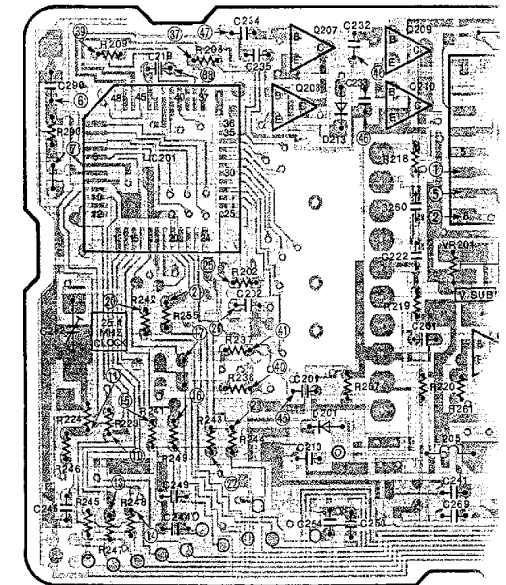
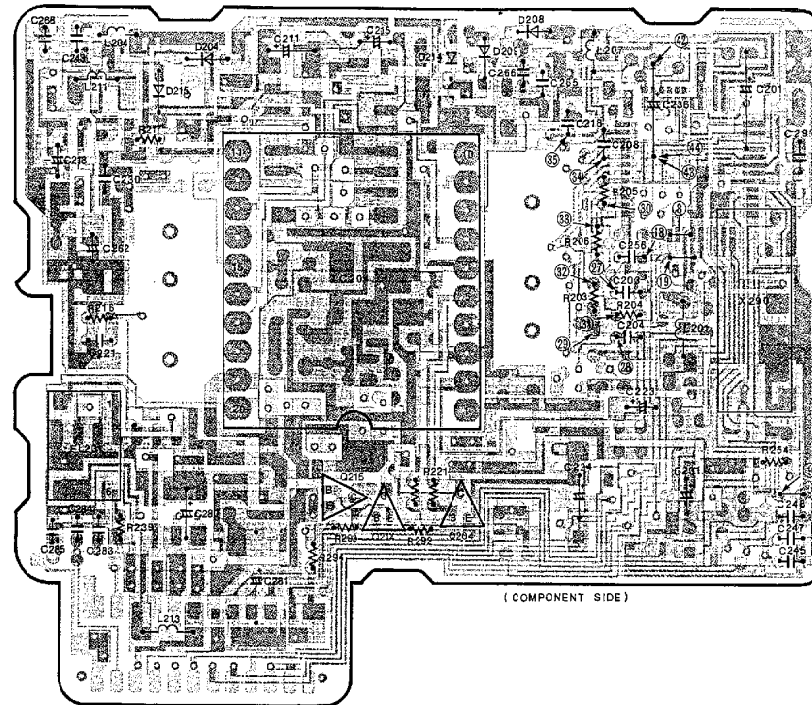


3-10. SENSOR C.B.A. (VEP22093A)

SENSOR CIRCUIT WAVEFORM



C
B
A



1 2 3 4 5 6

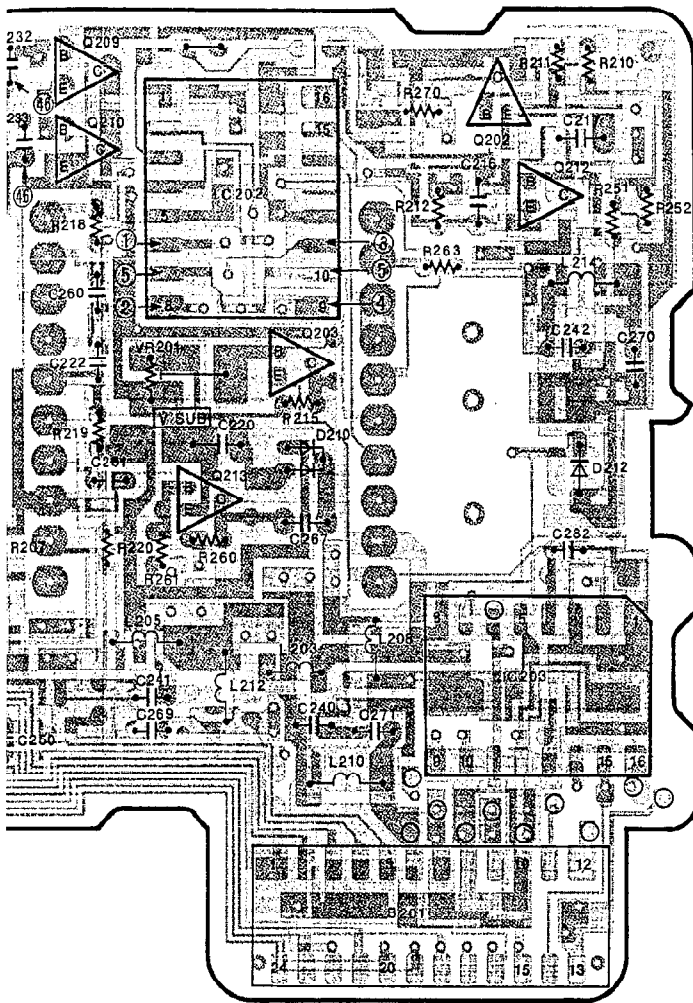
SENSOR Section

IC201 CHECK POINT
(COMPONENT SIDE)

PIN No.	SUBSTITUTION
⑧	W201
⑨	R254
⑩	C256
⑪	W202
⑫	C203
⑬	C204
⑭	C205
⑮	R205
⑯	R204
⑰	R203
⑱	R206
⑲	C208
⑳	C218
㉑	C201 ⊕
㉒	C201 ⊖
㉓	C201 ⊖

IC201 CHECK POINT
(FOIL SIDE)

PIN No.	SUBSTITUTION
①	IC202 ⑥
②	IC202 ⑧
③	IC202 ⑪
④	IC202 ⑨
⑤	IC202 ⑦ ⑩
⑥	R290
⑦	R291
⑩	R223
⑪	R224
⑬	R247
⑭	R248
⑮	R241
⑯	R249
⑰	R275
⑳	R242
㉑	R255
㉒	R243
㉓	R244
㉔	R202
㉖	C202
㉗	R208
㉘	C219
㉙	R209
㉚	R238
㉛	R237
㉜	C209
㉞	C232, C233
㉟	C234, C235



SENSOR C.B.A.

Transistor

Q202	C-7	Ⓕ
Q203	C-6	Ⓕ
Q204	B-3	Ⓒ
Q207	C-5	Ⓕ
Q208	C-5	Ⓕ
Q209	C-6	Ⓕ
Q210	C-6	Ⓕ
Q212	C-7	Ⓕ
Q213	B-6	Ⓕ
Q214	B-2	Ⓒ
Q215	B-2	Ⓒ

Integrated Circuit

IC201	C-5	Ⓕ
IC202	C-6	Ⓕ
IC203	B-7	Ⓕ
IC204	C-2	Ⓒ

Adjustment

C292	B-4 (F)
VR201	C-6 (F)

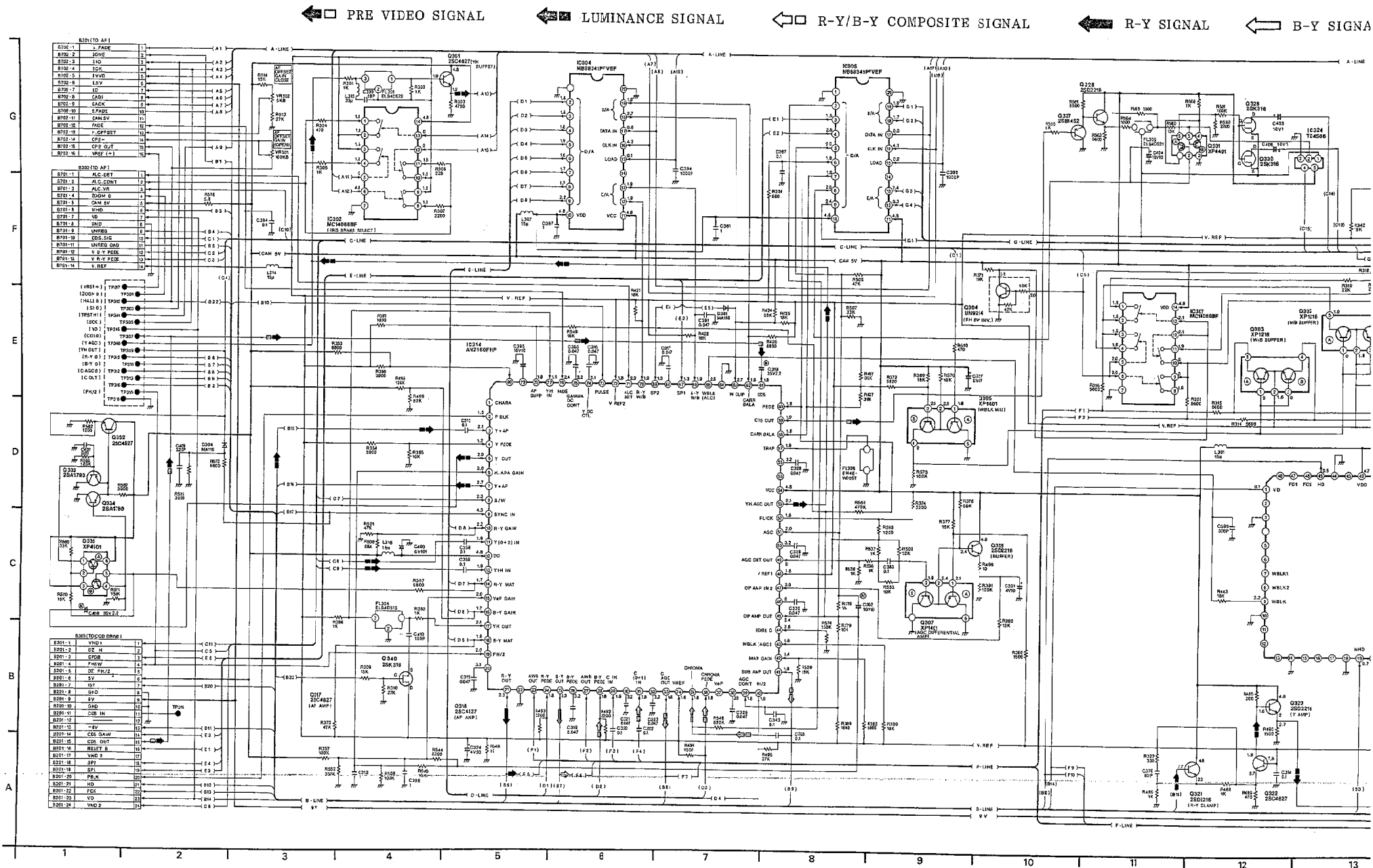
Connector

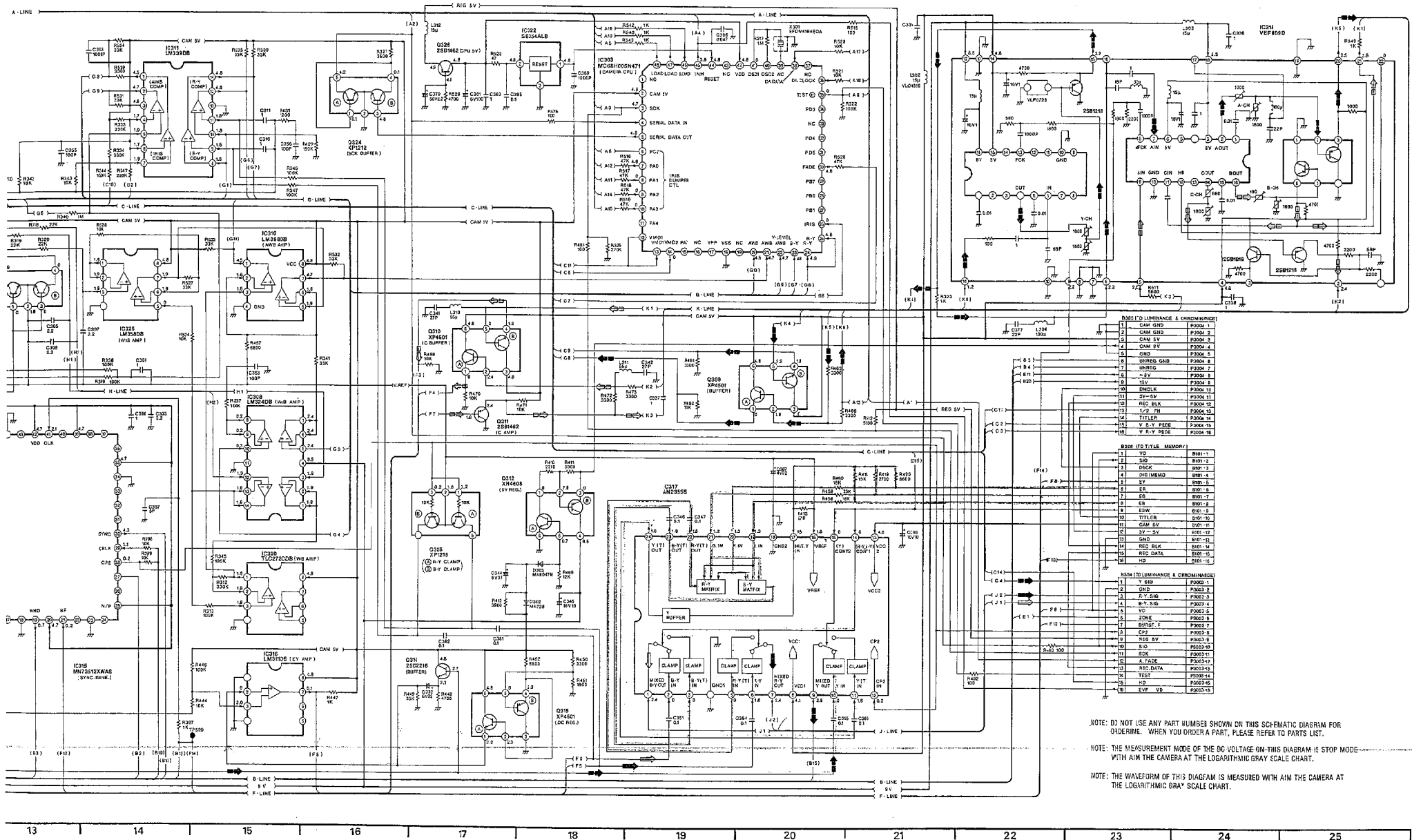
B201	A-7 (F)
------	---------

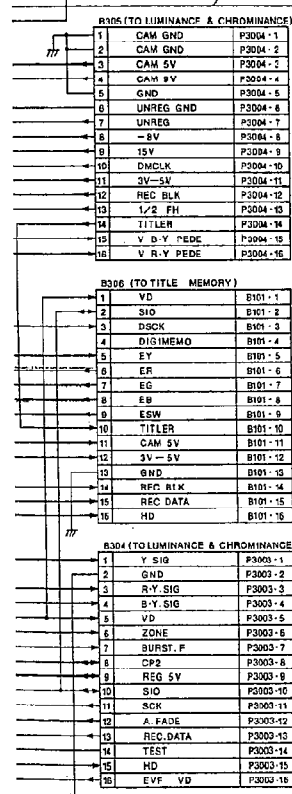
ADDRESS INFORMATION

© ... COMPONENT SIDE
 (F) ... FOIL SIDE

3-11. PROCESS SCHEMATIC DIAGRAM







NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE
WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

NOTE: THE WAVEFORM OF THIS DIAGRAM IS MEASURED WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

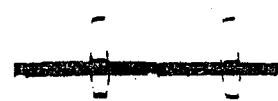
PROCESS CIRCUIT WAVE FORM

IC314-②



5.0Vp-p (STOP)

IC314-21

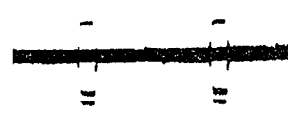
0.5V_{p-p} (STOP)

IC314-③



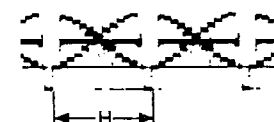
1.2V_{p-p} (STOP)

IC314-25



0.4 Vp-p (STOP)

IC314-⑤



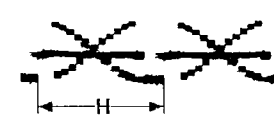
0.6 Vp-p (STOP)

IC314-33



0.2Vp-p (STOP)

IC314-⑦



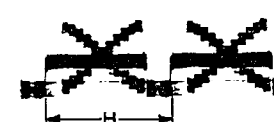
0.68 V_{p-p} (STOP)

IC314-④③



0.06 V_{p-p} (STOP)

IC314-⑪



0.3 Vp-p (STOP)

IC314-53



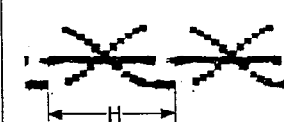
0.7 V_{p-p} (STOP)

IC314-⑬



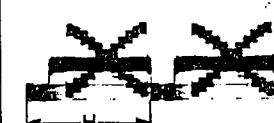
0.4 V_{p-p} (STOP)

IC314-59



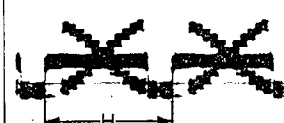
3.3V_{p-p} (STOP)

10314-⑦



1.0 Vp-p (STOP)

IC314-61



0.2 V_{p-p} (STOP)

IC314-⑥⑤



2.5Vp-p (STOP)

IC314-⑥⑦, ⑥⑨



4.2Vp-p (STOP)

IC314-⑦⑦



0.4Vp-p (STOP)

IC315-①



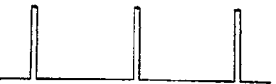
5.0Vp-p (STOP)

IC315-②①



5.0Vp-p (STOP)

IC315-②⑧



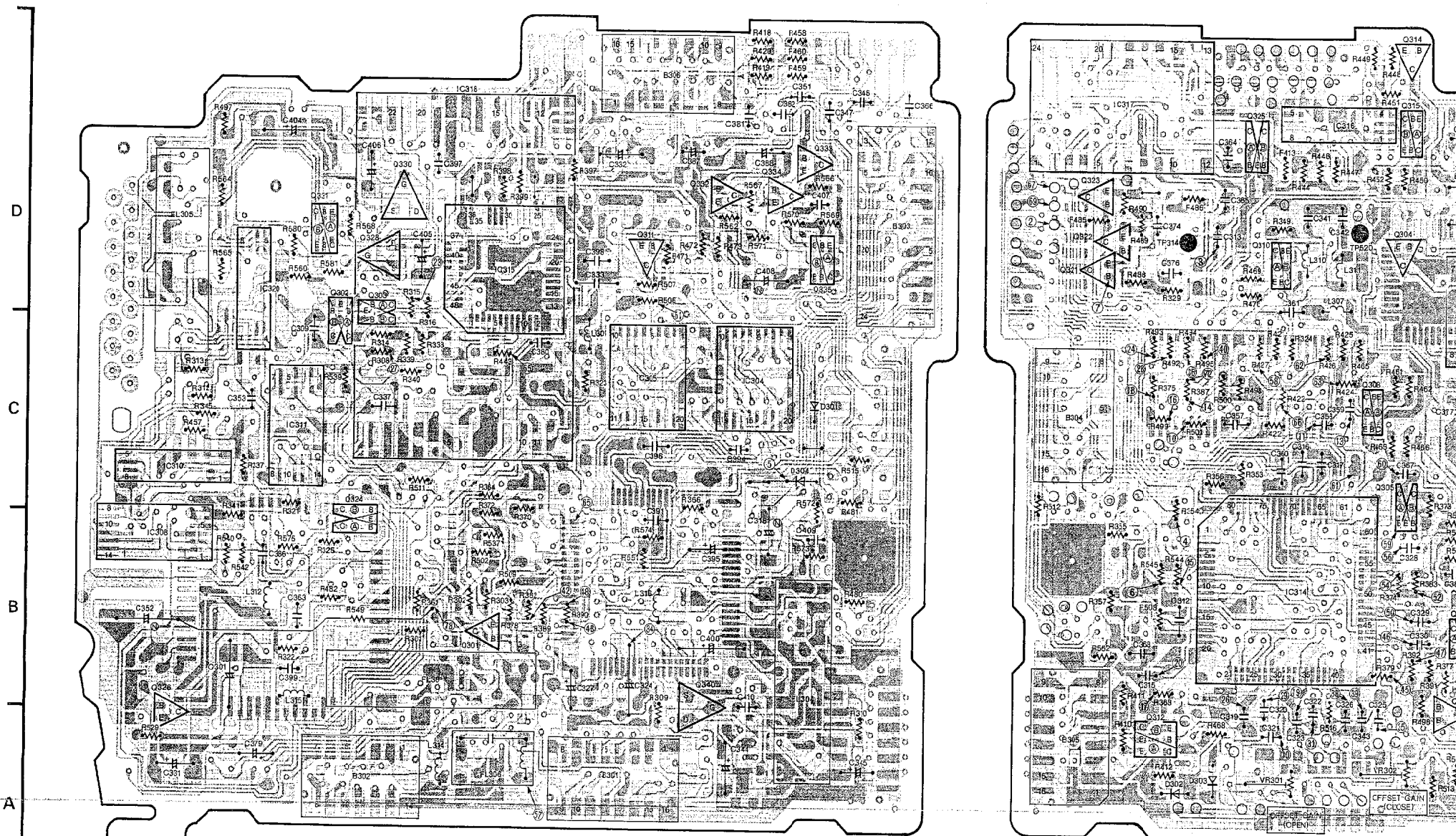
5.0Vp-p (STOP)

IC315-④⑤



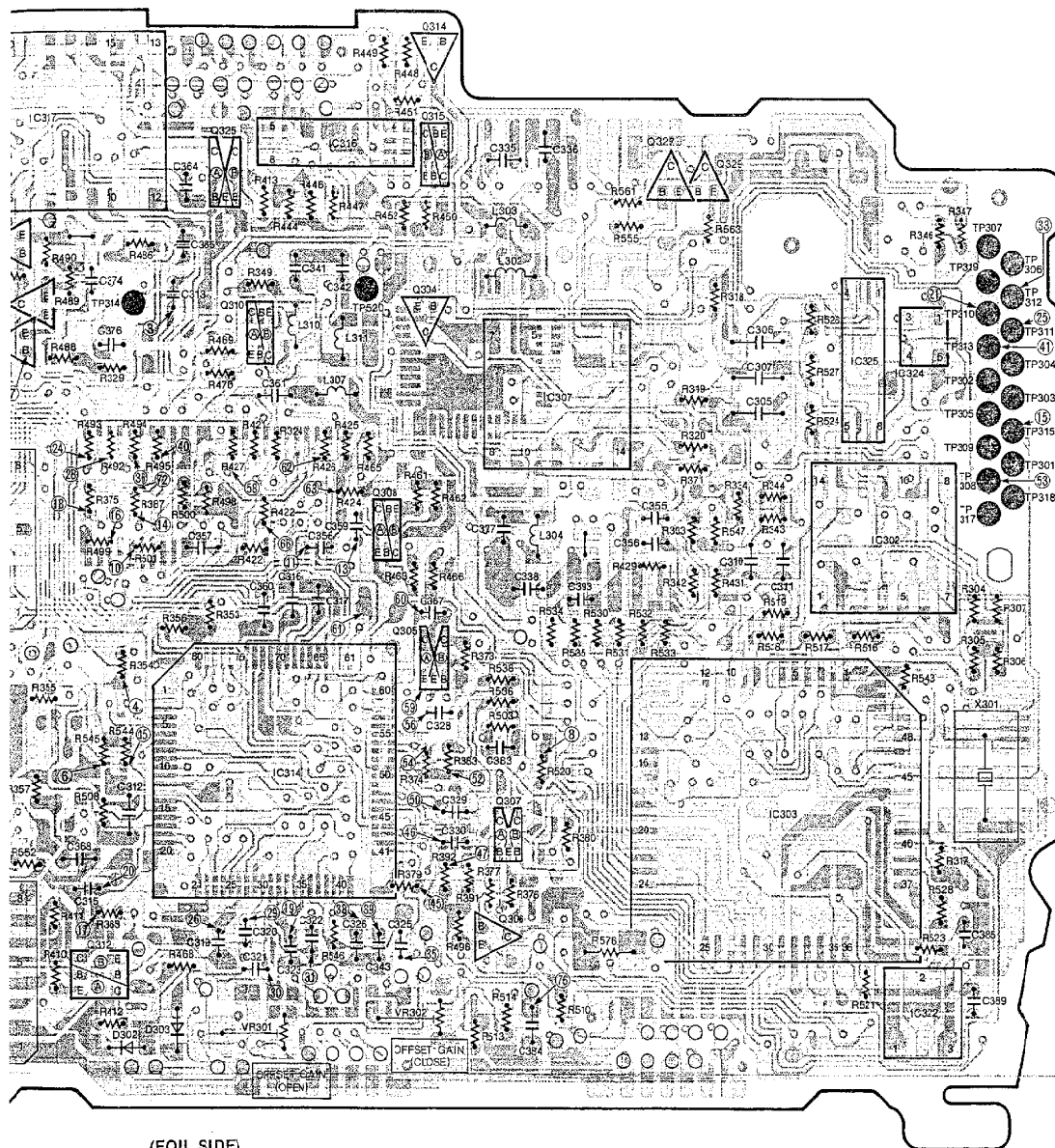
0.8Vp-p (STOP)

3-12. PROCESS C.B.A. (VEP23110A)



(COMPONENT SIDE)

(FOIL SIDE)



(FOIL SIDE)

PROCESS C.B.A			
Transistor		IC315	
Q301	B3	IC316	D-3
Q302	D2	IC317	D-7
Q303	D2	IC318	D-3
Q304	D8	IC320	D-2
Q305	C8	IC322	A-10
Q306	B8	IC324	D-10
Q307	B8	IC325	D-10
Q308	C8	Test Point	
Q310	D7		
Q311	D4	TP311	C-10
Q312	A7	TP312	D-10
Q314	D8	TP313	D-10
Q315	D8	TP314	D-10
Q320	D5	TP315	C-10
Q321	D6	TP316	D-10
Q322	D6	TP317	D-10
Q323	D6	TP318	D-10
Q324	C2	TP319	D-10
Q325	D7	TP320	D-10
Q326	A1	TP321	D-10
Q327	D9	TP322	D-10
Q328	D2	TP323	D-10
Q329	D9	TP324	D-10
Q330	D2	TP325	D-10
Q331	D2	TP326	D-10
Q332	D4	TP327	D-10
Q333	D5	TP328	D-10
Q334	D5	TP329	D-10
Q335	D5	TP330	D-10
Q340	B5	TP331	D-10
Integrated Circuit		Adjustment	
		VR321	A-7
Connector		VR322	A-8
		IC314	
IC302	C-10	B301	A-4
IC303	B9	B302	A-2
IC304	C4	B303	D-5
IC305	C4	B304	C-6
IC307	D8	B305	A-6
IC308	B1	B306	D-4
IC310	C1		
IC311	C2		
IC314	B7		

ADDRESS INFORMATION
 @ ... COMPONENT SIDE
 @ ... FCIL SIDE

IC314 CHECK POINT (FOIL SIDE)

PIN No.	SUBSTITUTION
①	C313
②	R354
③	C370
④	Q321 (B)
⑤	R520
⑥	R501
⑦	C358
⑧	C359
⑨	R387
⑩	R544
⑪	R499
⑫	R363
⑬	R375
⑭	TP315
⑮	C315
⑯	TP311
⑰	TP311
⑱	C319
⑲	R308
⑳	R492
㉑	C320
㉒	C321
㉓	C322
㉔	C323
㉕	TP312
㉖	C325
㉗	F494
㉘	C326
㉙	C343
㉚	F495
㉛	TP313
㉜	R379
㉝	C330
㉞	R392
㉟	R536
㊱	C329
㊲	R383
㊳	TP308
㊴	R374
㊵	C328
㊶	R427
㊷	C305
㊸	C367
㊹	C318
㊺	R426
㊻	R424
㊼	C317
㊽	R387
㊾	C316
㊿	C360
1	C384
2	C395
3	R353

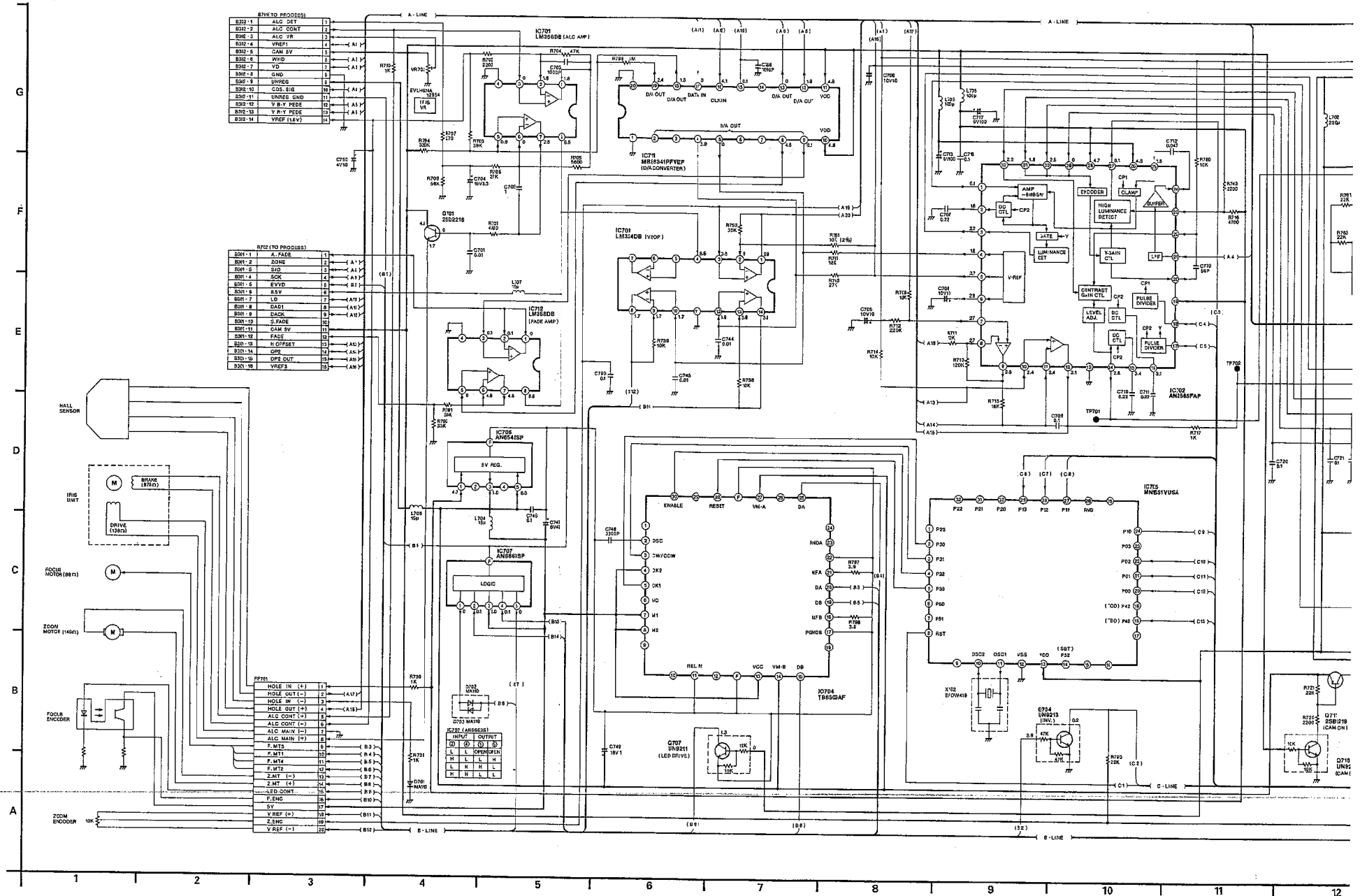
IC314 CHECK POINT (COMPONENT SIDE)

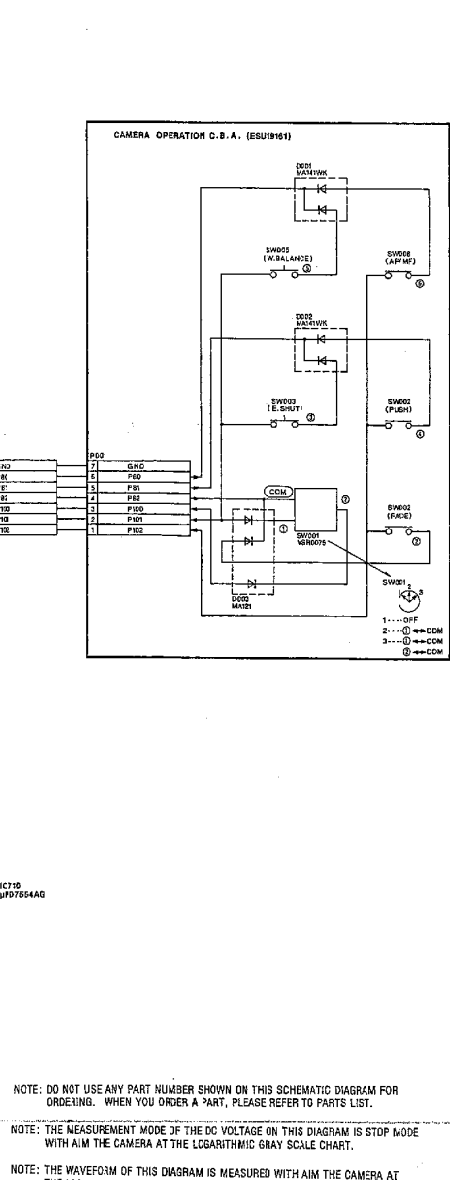
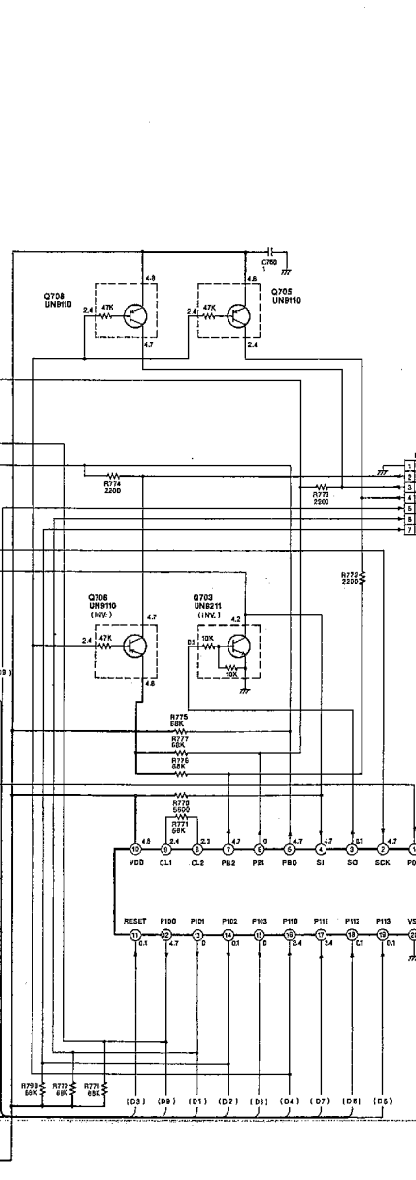
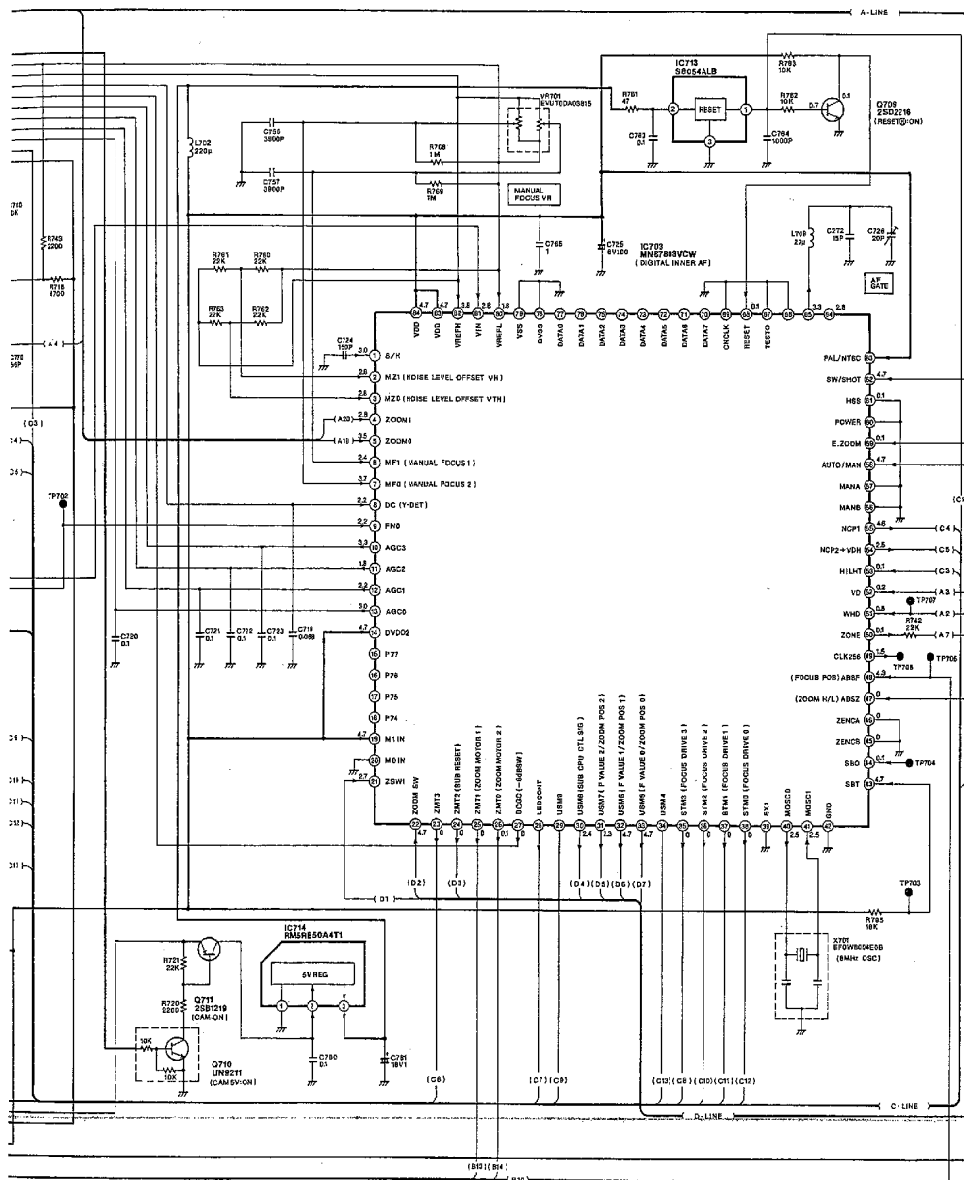
PIN No.	SUBSTITUTION
①	B303
②	D304
③	F of MIC
④	B303
⑤	R315
⑥	C324
⑦	R382
⑧	R390
⑨	C390
⑩	R390
⑪	R506
⑫	FL306
⑬	R393
⑭	B303
⑮	B303
⑯	C304
⑰	B302
⑱	F of MIC
㉑	FL304
㉒	R361

IC315 CHECK POINT

PIN No.	SUBSTITUTION
①	B303
②	B304
③	B304
④	B303

3-13 AUTO FOCUS SCHEMATIC DIAGRAM





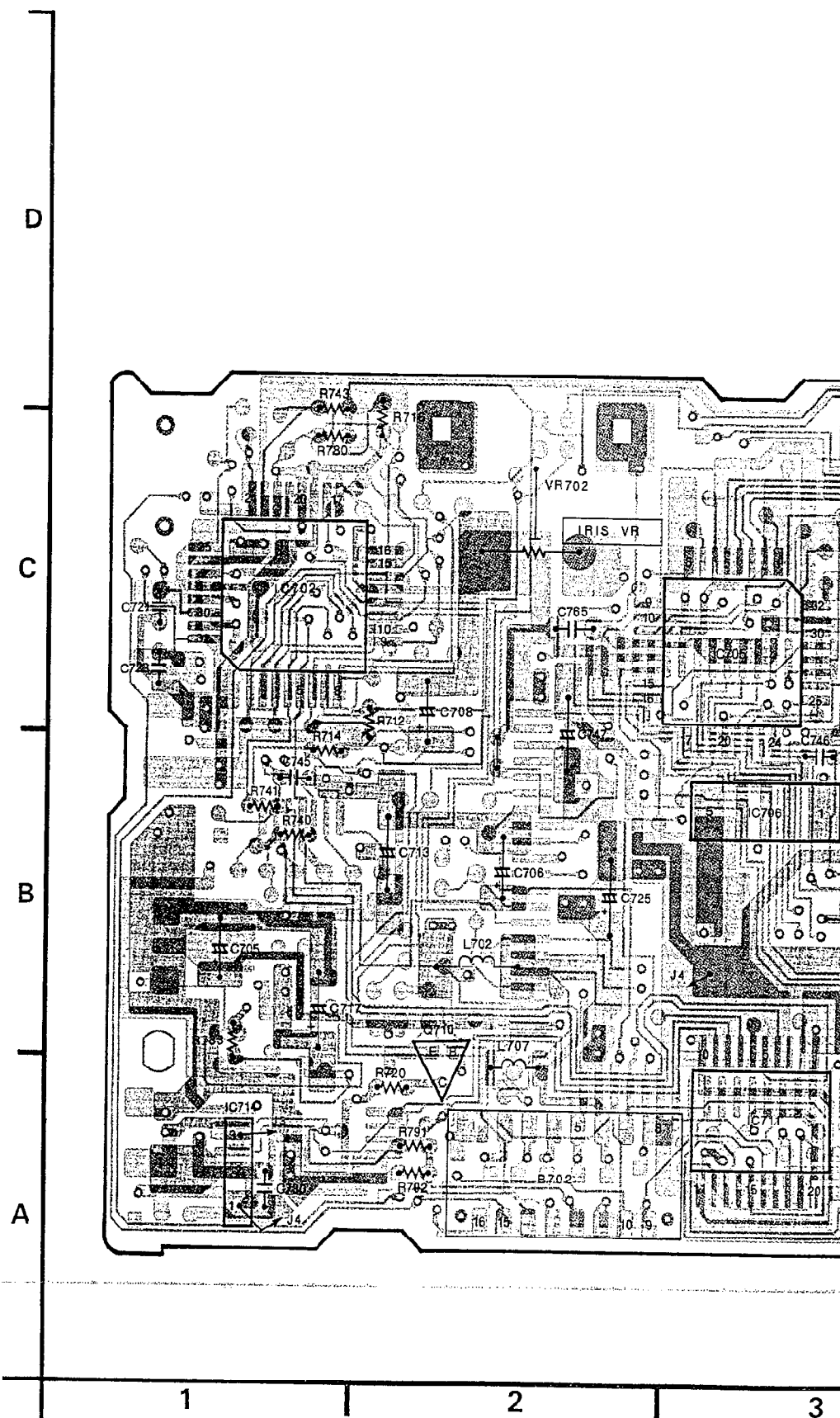
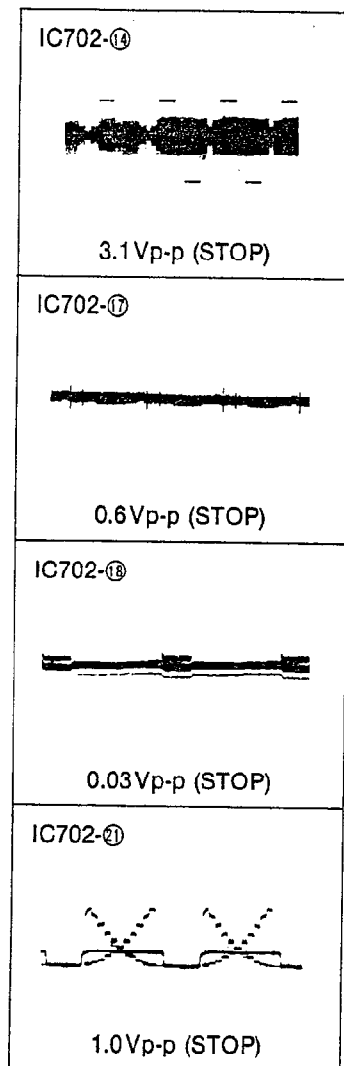
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

NOTE: THE WAVEFORM OF THIS DIAGRAM IS MEASURED WITH AIM CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

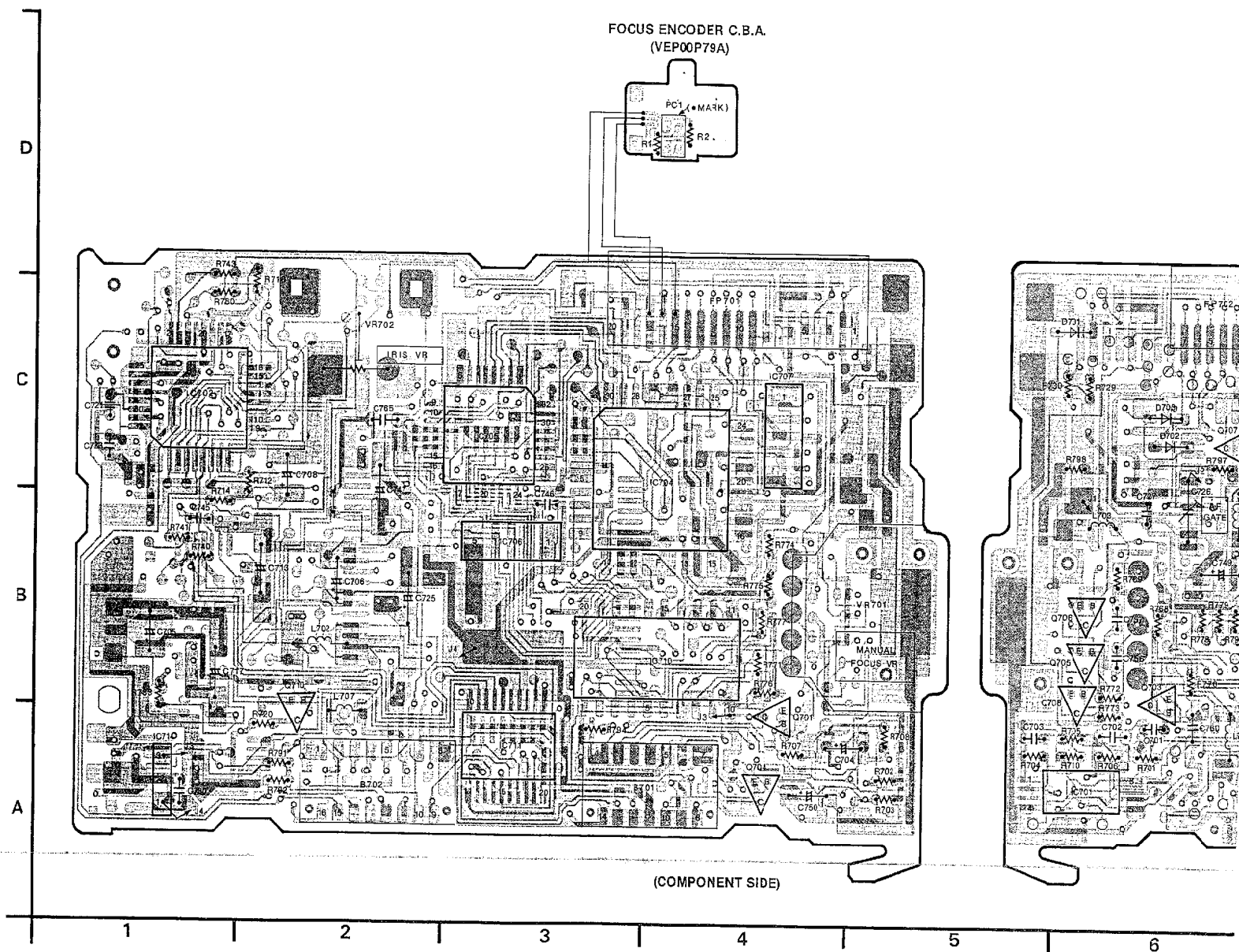
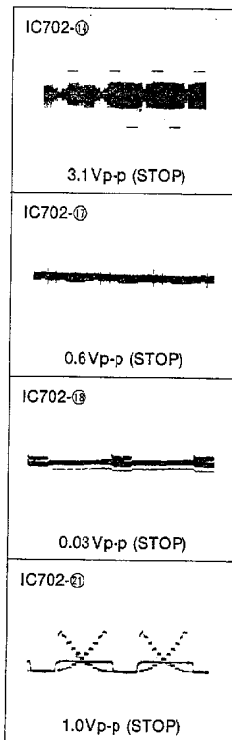
3-14 AUTO FOCUS C B A (VEP27054A)

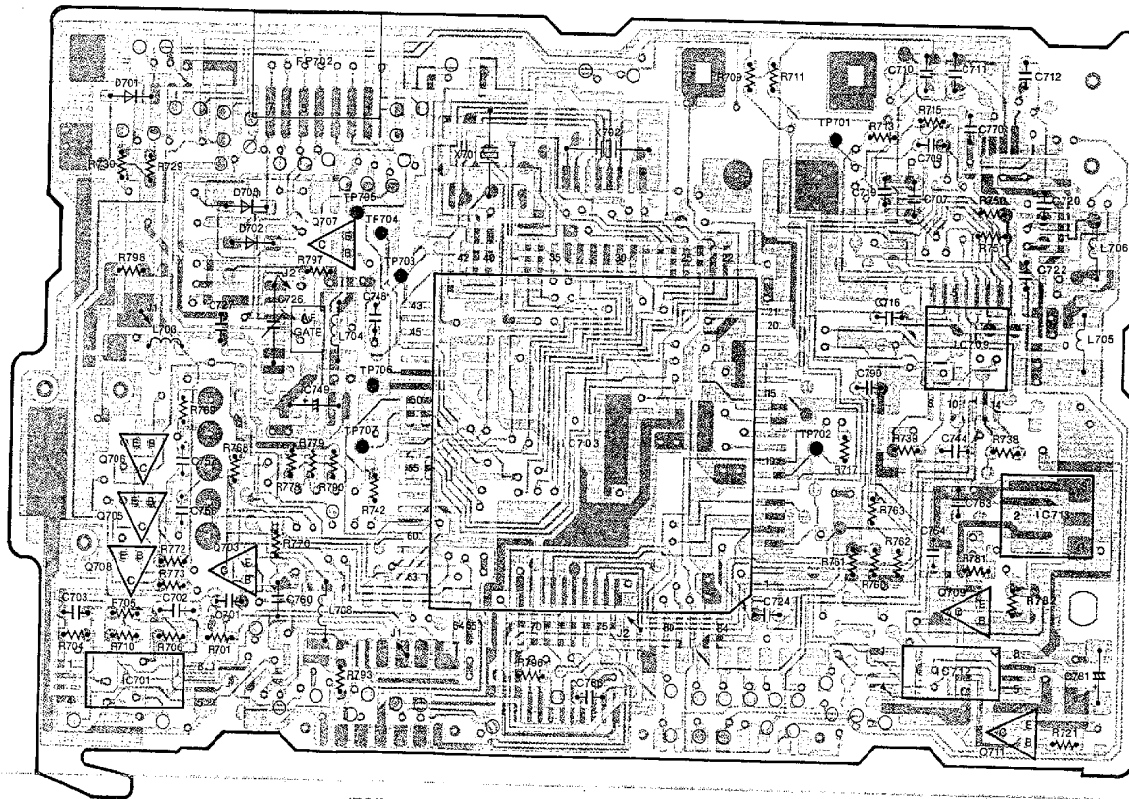
AUTO FOCUS CIRCUIT WAVEFORM



3-14 AUTO FOCUS C B A (VEP27054A)

AUTO FOCUS CIRCUIT WAVEFORM





(FOIL SIDE)

AUTO FOCUS C.B.A.		
Transistor		
Q701	A-4	⊙
Q703	B-6	⊙
Q704	A-4	⊙
Q705	B-6	⊙
Q706	C-6	⊙
Q707	B-6	⊙
Q708	B-6	⊙
Q709	B-9	⊙
Q711	A-9	⊙
Integrated Circuit		
IC701	A-6	⊙
IC702	C-1	⊙
IC703	3-7	⊙
IC704	C-4	⊙
IC705	C-3	⊙
IC706	B-3	⊙
IC707	C-4	⊙
IC709	B-9	⊙
IC710	B-4	⊙
IC711	A-3	⊙
IC712	A-9	⊙
IC713	B-9	⊙
IC714	A-1	⊙
Test Point		
TP701	C-6	⊙
TP702	E-6	⊙
TP703	C-7	⊙
TP704	C-7	⊙
TP705	C-6	⊙
TP706	B-7	⊙
TP707	B-6	⊙
Adjustment		
C726	C-6	⊙
VR701	B-5	⊙
VR702	C-2	⊙
Connector		
B701	A-4	⊙
B702	A-2	⊙
FP701	C-4	⊙
FP702	C-6	⊙

ADDRESS INFORMATION
 ⊙ ... COMPONENT SIDE
 ⊙ ... FOIL SIDE



TITLE MEMORY BACKUP C B.A. (VEP21101A)

D

C

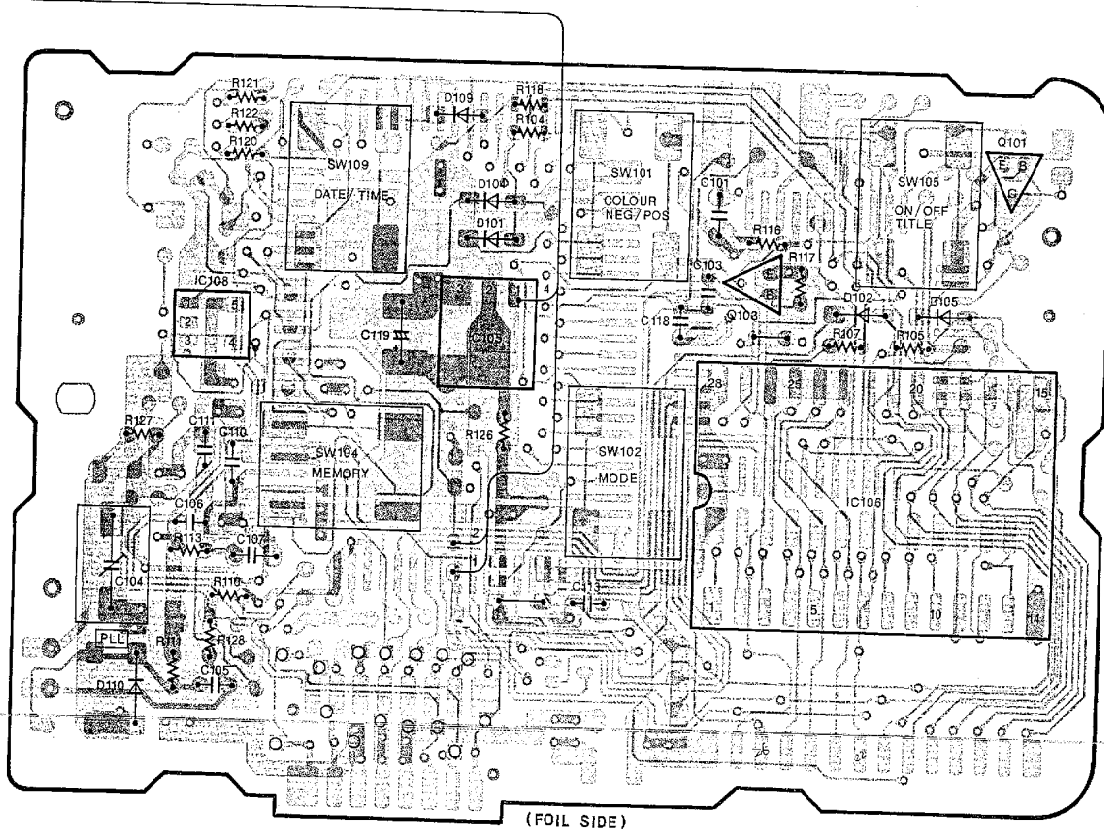
B

A

(COMPONENT SIDE)

(FOIL SIDE)

1 2 3 4 5 6



TITLE MEMORY C.B.A.

Transistor

Q101	C-8	⊗
Q102	A-2	⊗
Q103	B-7	⊗

Integrated Circuit

IC101	B-2	⊗
IC102	B-3	⊗
IC103	A-1	⊗
IC104	B-4	⊗
IC105	B-6	⊗
IC106	B-7	⊗
IC108	B-5	⊗
IC109	D-2	⊗
IC110	D-2	⊗
IC151	D-1	⊗
IC152	D-1	⊗

Adjustment

C104	A-5	⊗
------	-----	---

Connector

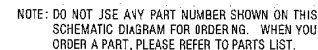
B101	A-3	⊗
------	-----	---

ADDRESS INFORMATION

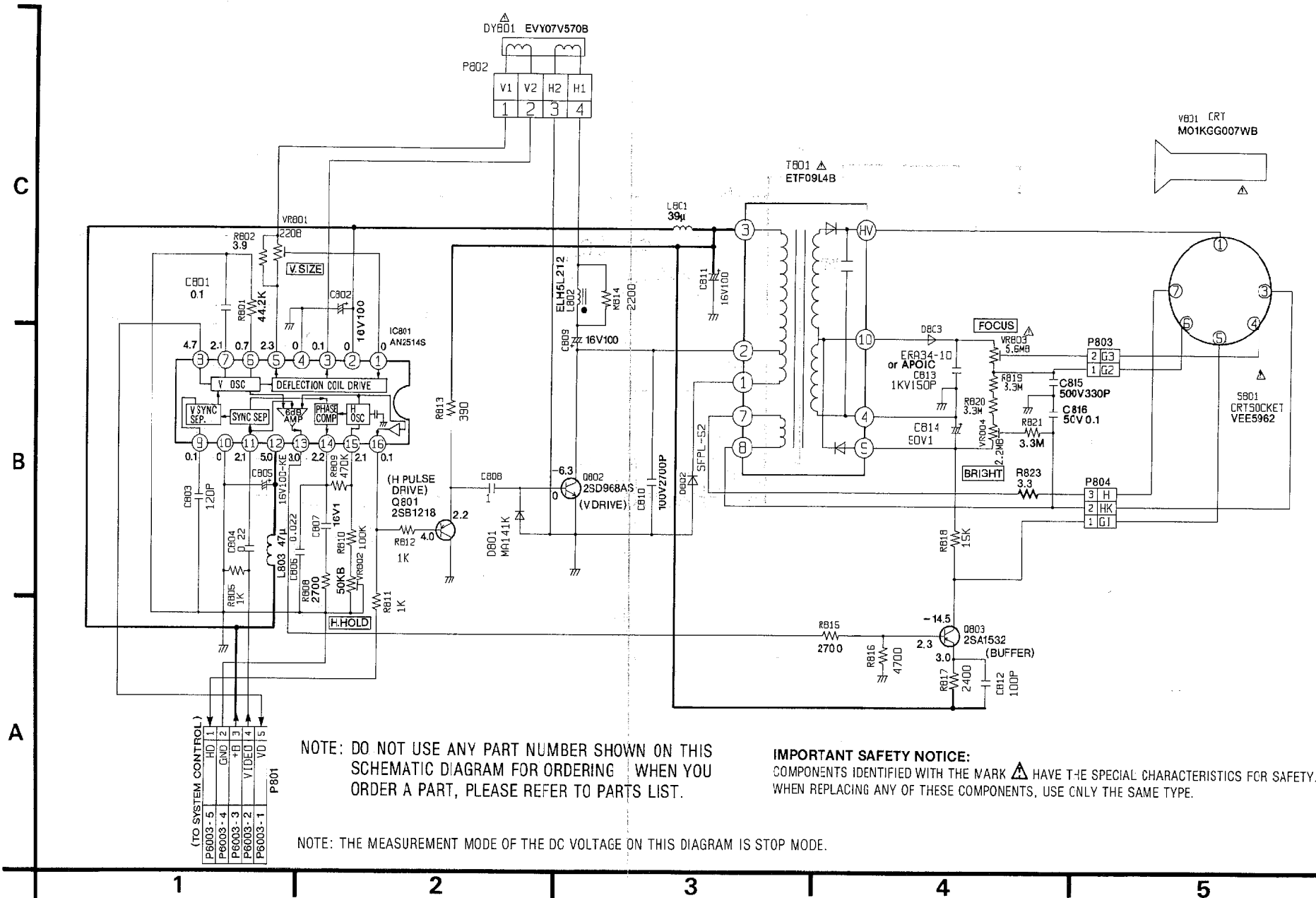
⊗... COMPONENT SIDE
⊗... FOIL SIDE

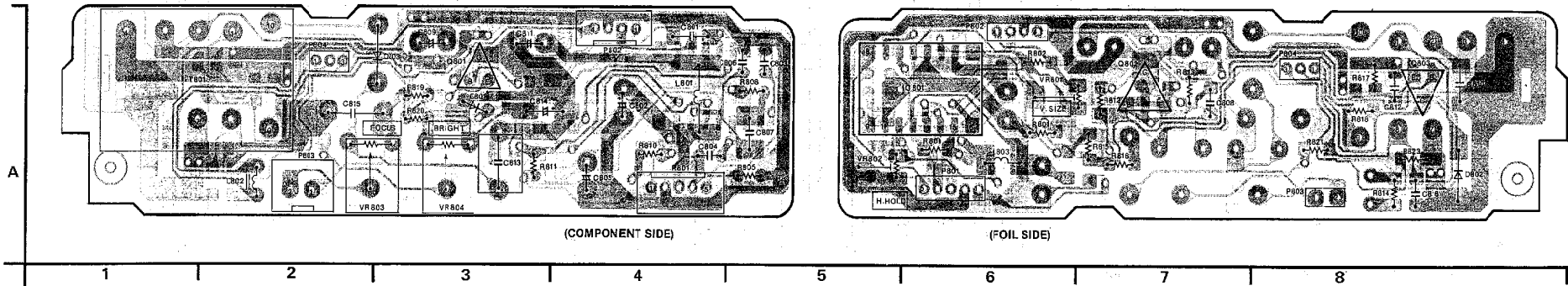
(1) 10.7 up node 2
 7D 2 10 1 3 1 3 2

(2) 270-18E-tr
 右端 ETD 2



3-17 E V F SCHEMATIC DIAGRAM

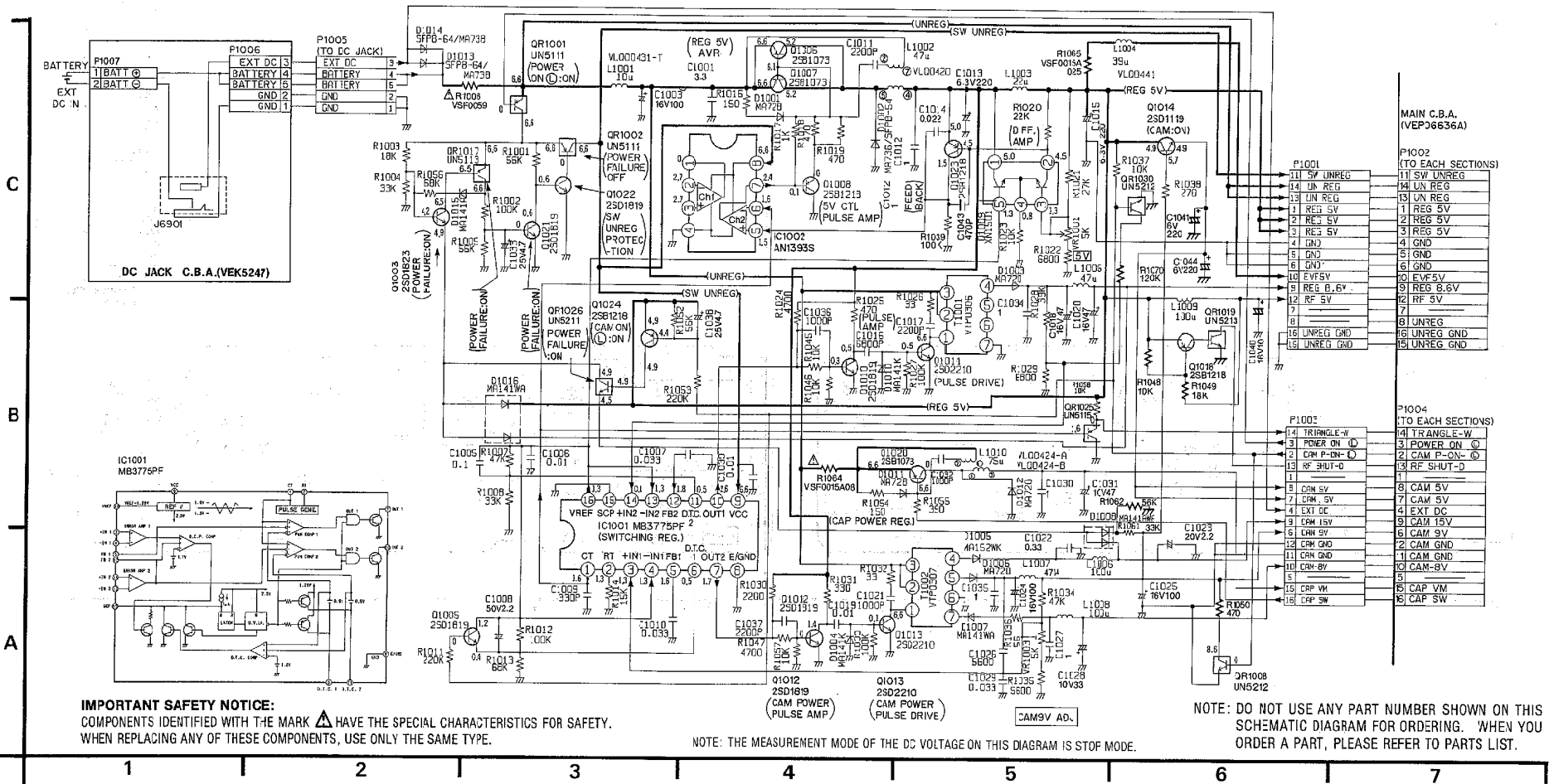




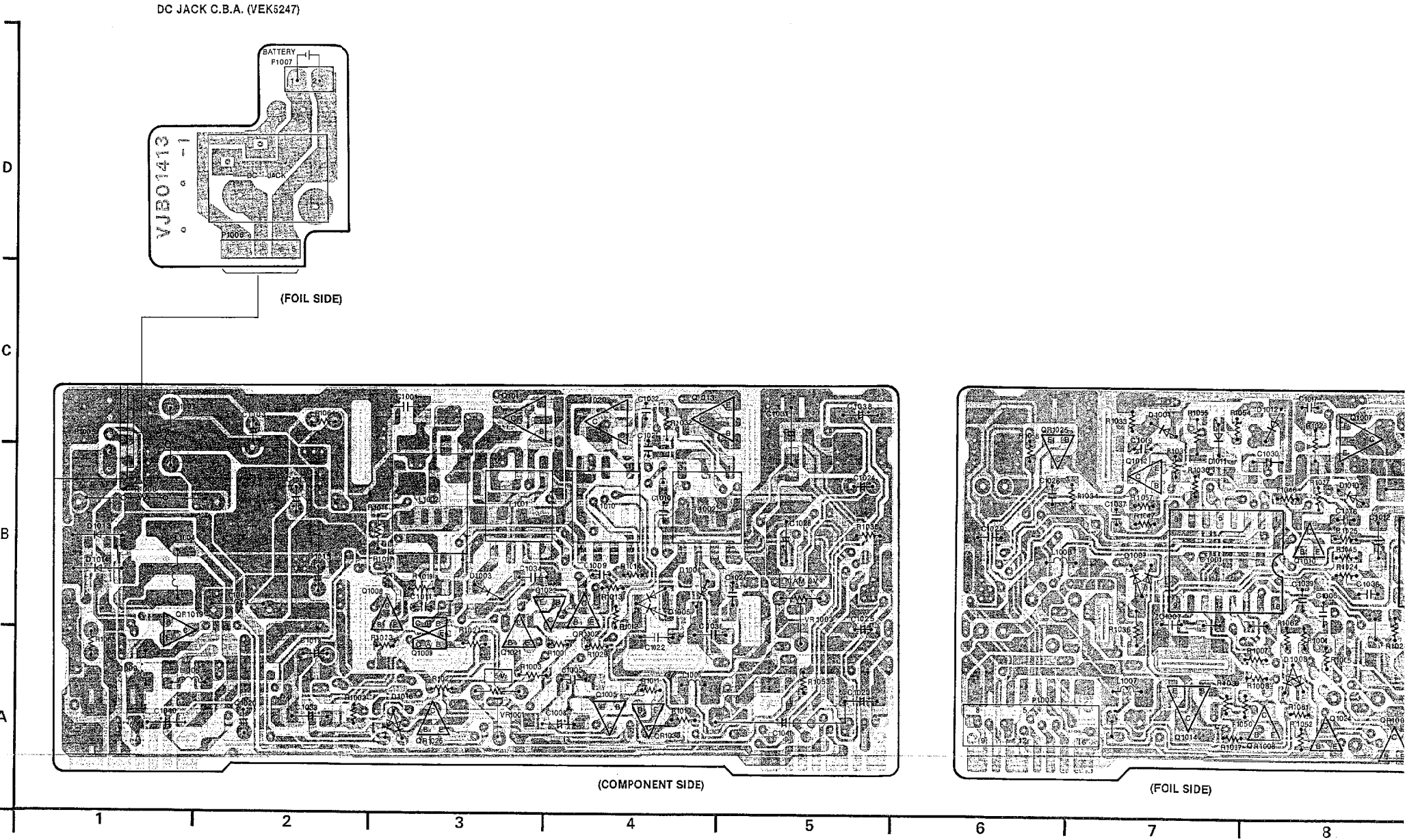
E.V.F. C.B.A.		
Translator		
Q801	A-3	Ⓢ
Q802	A-7	Ⓢ
Integrated Circuit		
IC801	A-8	Ⓢ
Adjustment		
VR801	A-6	Ⓢ
VR802	A-5	Ⓢ
VR803	A-3	Ⓢ
VR804	A-3	Ⓢ
Connector		
P801	A-4	Ⓢ
P801	A-E	Ⓢ
P802	A-4	Ⓢ
P802	A-E	Ⓢ
P803	A-2	Ⓢ
P803	A-8	Ⓢ
P804	A-2	Ⓢ
P804	A-8	Ⓢ

ADDRESS INFORMATION
Ⓢ ... COMPONENT SIDE
Ⓢ ... FOIL SIDE

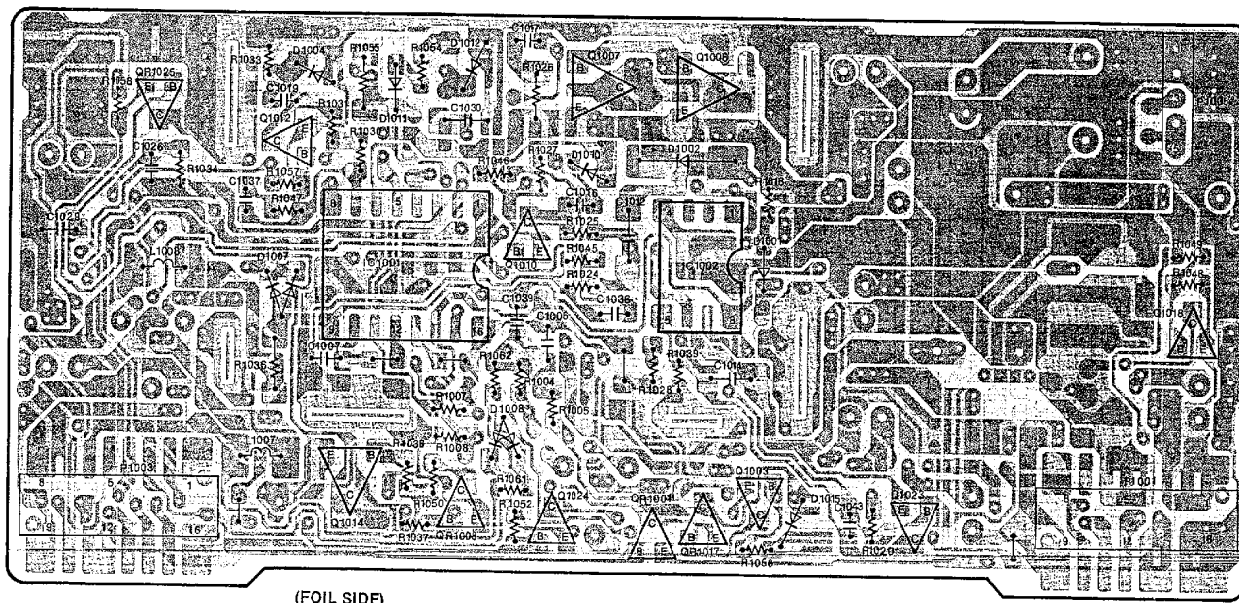
3-19 POWER SCHEMATIC DIAGRAM



3-20. POWER C.B.A. (VEP01450A)



POWER Section



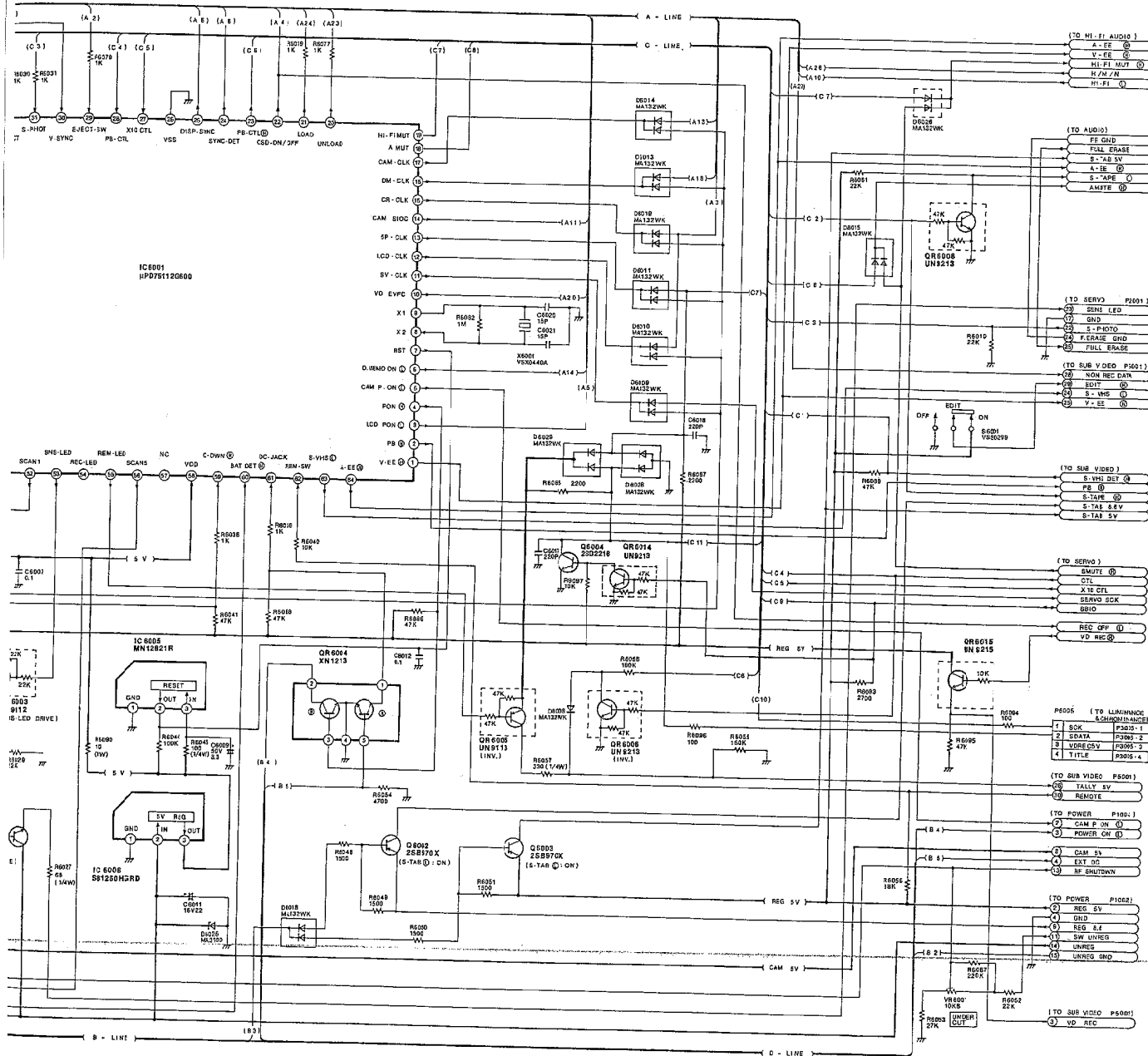
(FOIL SIDE)

POWER C.B.A.		
Transistor		
Q1003	A-9	Ⓢ
Q1005	A-4	Ⓢ
Q1006	C-9	Ⓢ
Q1007	C-8	Ⓢ
Q1008	B-3	Ⓢ
Q1009	A-3	Ⓢ
Q1010	B-8	Ⓢ
Q1011	C-3	Ⓢ
Q1012	B-7	Ⓢ
Q1013	C-4	Ⓢ
Q1014	A-7	Ⓢ
Q1020	C-4	Ⓢ
Q1021	A-3	Ⓢ
Q1022	B-4	Ⓢ
Q1023	A-9	Ⓢ
Q1024	A-8	Ⓢ
Transistor & Resistor		
QR1001	A-8	Ⓢ
QR1002	B-4	Ⓢ
QR1008	A-8	Ⓢ
QR1017	A-9	Ⓢ
QR1025	C-6	Ⓢ
QR1028	A-3	Ⓢ
QR1030	A-4	Ⓢ
Integrated Circuit		
IC1001	B-7	Ⓢ
IC1002	B-8	Ⓢ
Adjustment		
VR1001	A-3	Ⓢ
VR1003	B-5	Ⓢ
Connector		
P1001	A-10	Ⓢ
P1003	A-6	Ⓢ
P1005	C-1	Ⓢ
P1005	C-10	Ⓢ
P1006	C-2	Ⓢ
P1007	C-2	Ⓢ

ADDRESS INFORMATION
 Ⓢ ... COMPONENT SIDE
 Ⓢ ... FOIL SIDE

6 | 7 | 8 | 9 | 10

3-59



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

SYSTEM CONTROL ICs DC VOLTAGE CHART (SP MODE)

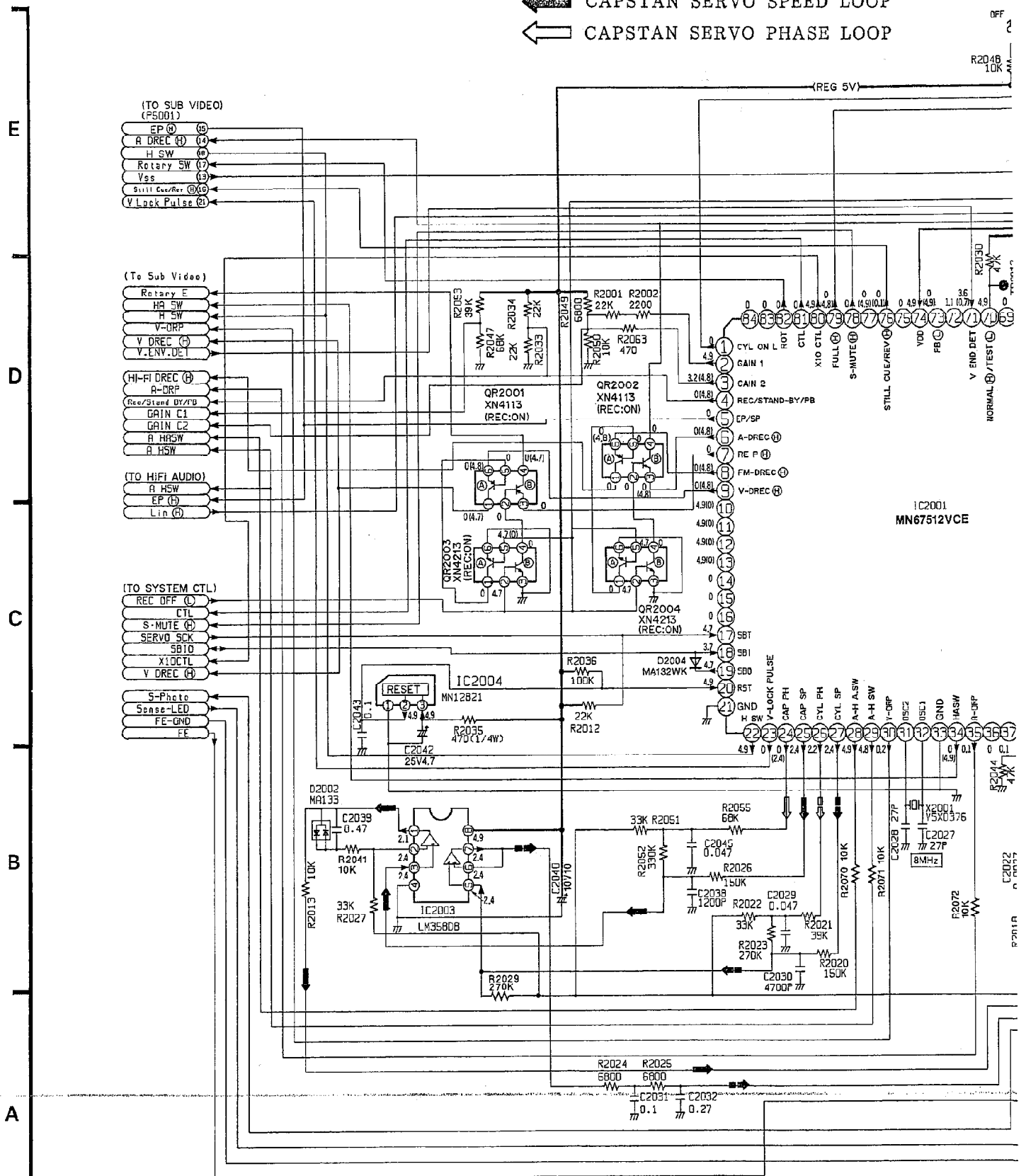
REF. NO.	IC6001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	4.6	0	0	4.8	0	4.8	4.8	5.1	0	1.4	4.7	1.0	4.6	4.2	4.7	4.7	4.7	4.8	4.6	0
PLAY	0	4.8	0	4.8	4.8	4.8	4.8	2.5	2.3	0	4.7	4.6	4.6	0	4.8	4.8	4.8	0	0	0
FF	4.7	0	0	4.8	0	4.8	4.7	2.6	2.3	2.4	4.7	4.6	4.6	4.2	4.8	4.8	4.8	4.8	0	0
REF. NO.	IC6001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0	4.7	0	4.8	4.8	0	0	0	4.6	0	0	0	0	3.2	4.9	4.7	0.4	0	0	0.8
PLAY	0	4.8	0	4.8	4.8	0	4.9	3.4	3.5	3.5	0	0	0	0	4.9	4.7	0.4	0	0	0
FF	0	4.8	0	4.8	4.8	0	3.2	2.5	4.8	3.8	0	0.1	0	0.8	—	—	0.5	0	0	0.8
REF. NO.	IC6001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	3.9	3.7	4.2	4.8	4.8	4.8	4.6	4.7	4.7	4.7	4.6	4.8	4.8	2.0	4.7	2.4	4.5	4.8	4.7	4.3
PLAY	4.0	3.8	4.2	4.8	0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	0.5	4.9	2.8	4.2	4.9	4.9	4.5
FF	4.0	3.8	4.2	4.8	4.8	4.8	4.8	4.7	4.7	4.7	4.7	4.7	4.7	2.4	1.2	4.7	2.2	3.9	4.9	4.7
REF. NO.	IC6001																			
MODE	61	62	63	64																
STOP	0	4.7	4.7	4.8																
PLAY	0	4.9	4.7	0																
FF	0	4.6	4.7	4.8																
REF. NO.	IC6002																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	4.1	0	3.9	0	4.9	1.5	2.4	2.4	0	0.5	0	0	0	0	0	0	3.8	3.8	4.9
PLAY	0	4.2	0	3.8	2.0	4.9	1.8	2.3	2.3	0	0.5	0	0	0	0	2.1	0	3.5	3.7	4.7
FF	0	0	0	0.2	3.8	4.9	4.9	0.6	2.3	0	0.6	0	0	0	0	0.7	0	3.6	3.7	4.7
REF. NO.	IC6003																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	3.8	4.2	0	0	4.8	0.5	0	0	0	0.5	0.5	4.9	4.2	4.9						
PLAY	3.8	0	0	0	4.8	0.5	0	0	0.5	1.0	1.0	4.9	0	4.9						
FF	3.8	4.2	0.1	0.1	4.8	0.6	0	-0.1	0.1	1.3	1.3	4.9	4.2	4.9						
REF. NO.	IC6004								IC6005											
MODE	1	2	3	4	5	6	7	8			1	2	3							
STOP	4.6	0.1	2.6	0	3.0	2.9	4.2	4.9			0	4.9	4.9							
PLAY	4.3	4.2	2.6	0	0.5	0.2	0.7	0			0	4.9	0							
FF	4.2	4.2	2.5	0	3.2	3	4.6	4.9			0	4.9	5.0							
REF. NO.	IC6006																			
MODE	1	2	3																	
STOP	0	6.3	4.9																	
PLAY	0	6.4	4.9																	
FF	0	6.2	5.0																	

SYSTEM CONTROL TRANSISTORS DC VOLTAGE CHART (SP MODE)

REF. NO.	Q6001			Q6002			Q6003			Q6004								
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0.1	6.3	0	—	—	—	—	—	—	0	3.9	0.1						
PLAY	0.1	6.4	0	—	—	—	—	—	—	0	4.0	0.1						
FF	2.2	6.2	2.5	—	—	—	—	—	—	0	4.0	0.2						
REF. NO.	QR6001 ④			QR6001 ⑤			QR6003			QR6004 ⑤			QR6004 ⑥			QR6005		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	4.8	0	0	4.8	0	4.9	0	4.8	0	0	0.3	0	0	4.8	0	0	4.9
PLAY	0	0	0	0	0	0	4.9	0	4.8	0	0	6.7	0	0	4.8	4.9	0	4.9
FF	0	4.9	0	0	0.6	0	4.9	2.5	2.4	0	0	6.7	0	0	4.8	4.9	0.1	4.9
REF. NO.	QR6006			QR6008			QR6010			QR6011			QR6012			QR6014		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	0	0	0	2.8	0.1	3.8	3.9	1.4	4.8	10.3	0.8	4.9	0.1	4.7	0	0.1	3.7
PLAY	0	0	4.9	0	2.8	0	3.5	4.1	0	4.8	9.0	0.1	4.9	4.9	4.7	0	0.1	3.8
FF	0	0	2.4	0	2.8	0.1	3.8	4.0	1.4	4.7	6.4	1.2	4.9	—	3.5	0	0.9	3.8
REF. NO.	QR6015																	
MODE	E	C	B															
STOP																		
PLAY																		
FF																		

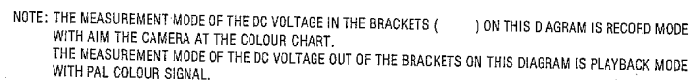
3-22. SERVO SCHEMATIC DIAGRAM

← CAPSTAN SERVO SPEED LOOP
← CAPSTAN SERVO PHASE LOOP



FOCUS WITH AIM THE CAMERA AT
COLOUR CHART.

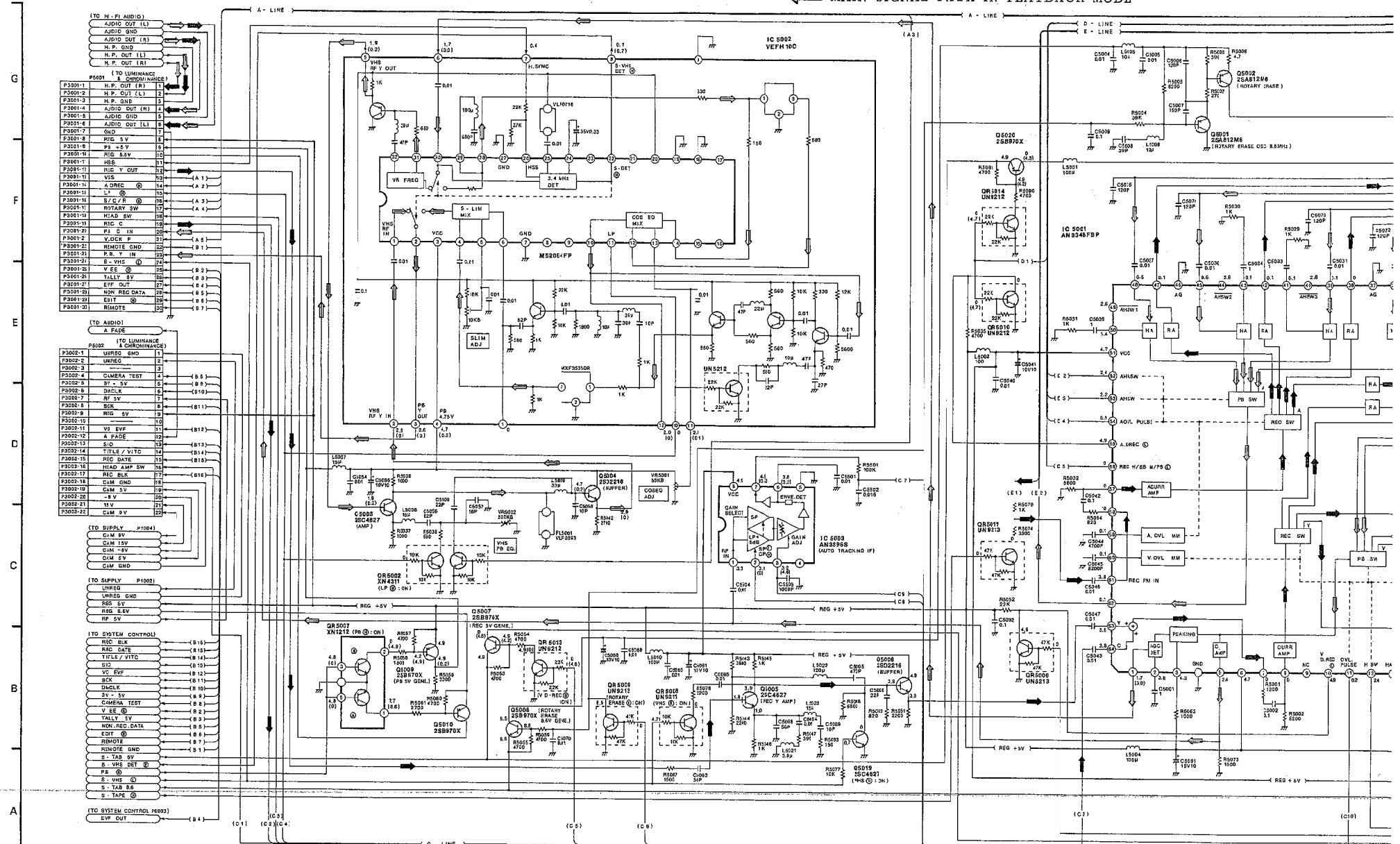
DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.



3-23 SUB VIDEO SCHEMATIC DIAGRAM

MAIN SIGNAL PATH IN REC MODE

MAIN SIGNAL PATH IN PLAYBACK MODE



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE WAVEFORM OF THIS DIAGRAM IS MEASURED WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART OR COLOUR CHART.

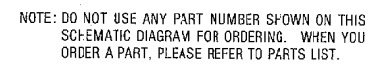
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS () ON THIS DIAGRAM WITH AIM THE CAMERA AT THE COLOUR CHART.

MASSAGE & THERAPEUTIC BODYWORK, LLC



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Back Page:
AUDIO Section

3-26. MAIN (POWER, SERVO, I

POWER Section	
Connector	
P1002	B-17 ②
P1004	C-17 ②

ADDRESS INFORMATION
 ② ... COMPONENT SIDE
 ③ ... FOIL SIDE

SERVO Section	
Transistor & Resistor	
QR2001	A-6 ②
QR2002	A-6 ②
QR2003	A-6 ②
QR2004	A-6 ②
QR2005	A-14 ②
QR2006	D-2 ②
Integrated Circuit	
IC2001	B-16 ②
IC2002	B-5 ②
IC2003	C-17 ②
IC2004	B-3 ②
IC2005	B-5 ②
Test Point	
TP2004	B-2 ②
TP2013	B-3 ②
Adjustment	
VR2001	D-2 ②
Connector	
P2001	A-4 ②

ADDRESS INFORMATION
 ② ... COMPONENT SIDE
 ③ ... FOIL SIDE

AUDIO Section	
Transistor	
Q4001	F-12 ②
Q4002	E-12 ②
Q4004	E-13 ②
Q4005	D-12 ②
Q4006	D-12 ②
Q4007	E-11 ②
Q4008	E-11 ②
Q4009	E-11 ②
Transistor & Resistor	
QR4002	E-11 ②
QR4003	E-12 ②
QR4005	F-12 ②
QR4006	F-12 ②
QR4007	E-12 ②
QR4008	E-13 ②
Integrated Circuit	
IC4001	E-11 ②
IC4002	D-12 ②
IC4003	E-13 ②
Test Point	
TP4001	F-9 ②
TP4002	E-9 ②
Adjustment	
VR4001	E-7 ②
VR4002	E-9 ②
Connector	
P4001	D-9 ②
P4001	D-11 ②
P4002	D-9 ②

ADDRESS INFORMATION
 ② ... COMPONENT SIDE
 ③ ... FOIL SIDE

SUB VIDEO Section	
Transistor	
Q5001	B-9 ②
Q5002	B-9 ②
Q5003	D-7 ②
Q5004	D-7 ②
Q5005	C-13 ②
Q5006	C-13 ②
Q5007	B-13 ②
Q5008	C-11 ②
Q5009	B-13 ②
Q5010	C-13 ②
Q5015	B-12 ②
Q5016	B-12 ②
Q5017	C-12 ②
Q5018	C-12 ②
Q5019	
Q5020	A-13 ②
Transistor & Resistor	
QR5002	D-7 ②
QR5005	C-7 ②
QR5007	B-13 ②
QR5008	C-14 ②
QR5009	C-11 ②
QR5010	B-14 ②
QR5011	D-13 ②
QR5013	B-13 ②
QR5014	A-13 ②
QR5017	
Integrated Circuit	
IC5001	C-8 ②
IC5002	D-8 ②
IC5003	A-13 ②
Test Point	
TP5003	A-10 ②
TP5004	A-7 ②
TP5005	A-7 ②
Adjustment	
VR5001	F-6 ②
VR5002	E-6 ②
Connector	
P5001	B-6 ②
P5002	E-6 ②
P5003	B-8 ②

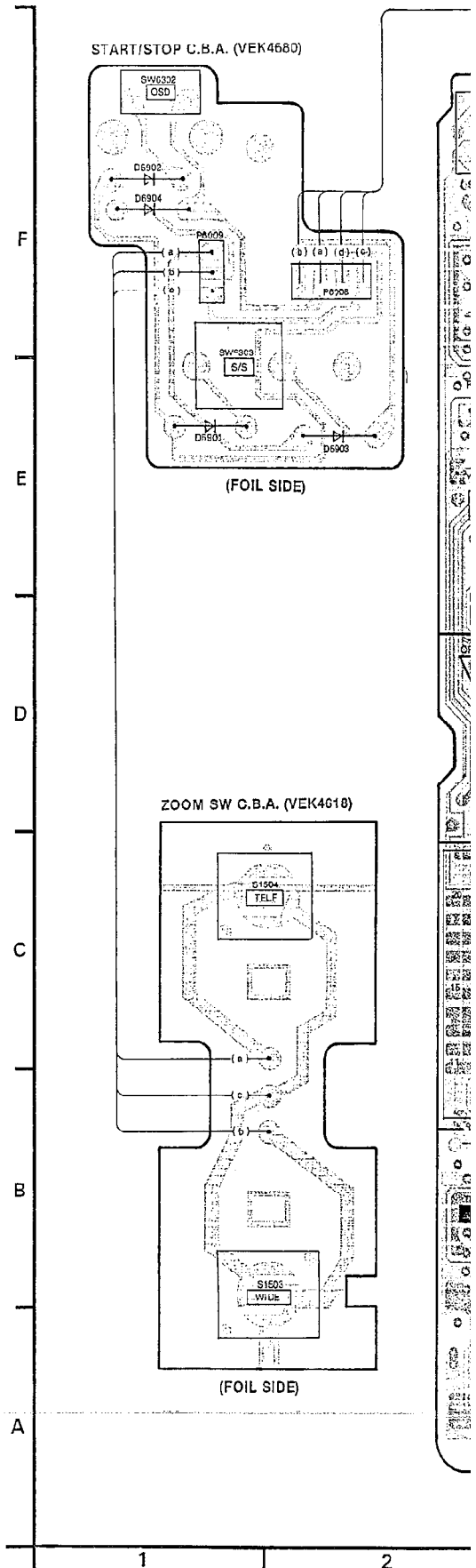
ADDRESS INFORMATION
 ② ... COMPONENT SIDE
 ③ ... FOIL SIDE

HI-FI AUDIO Section	
Transistor	
Q4501	C-14 ②
Q4502	C-14 ②
Q4503	C-15 ②
Q4504	C-14 ②
Q4507	F-13 ②
Q4508	F-13 ②
Q4509	C-15 ②
Q4510	C-14 ②
Transistor & Resistor	
QR4501	D-14 ②
QR4502	F-15 ②
QR4503	E-15 ②
QR4504	F-15 ②
QR4505	E-7 ②
Integrated Circuit	
IC4501	E-14 ②
IC4502	D-14 ②
Test Point	
TP4505	F-7 ②
TP4507	F-5 ②
Adjustment	
VR4501	E-5 ②
VR4502	F-6 ②
VR4503	F-5 ②
VR4504	F-5 ②
VR4505	F-5 ②

ADDRESS INFORMATION
 ② ... COMPONENT SIDE
 ③ ... FOIL SIDE

SYSTEM CONTROL Section	
Transistor	
Q6001	B-14 ②
Q6002	D-7 ②
Q6003	D-7 ②
Q6004	F-17 ②
Transistor & Resistor	
QR6001	F-16 ②
QR6002	F-13 ②
QR6003	B-15 ②
QR6004	D-15 ②
QR6005	D-5 ②
QR6006	D-5 ②
QR6007	F-13 ②
QR6008	F-16 ②
QR6010	C-16 ②
QR6011	F-13 ②
QR6012	D-17 ②
QR6013	C-16 ②
QR6014	F-17 ②
QR6015	A-3 ②
Integrated Circuit	
IC6001	D-17 ②
IC6002	E-16 ②
IC6003	E-17 ②
IC6004	F-17 ②
IC6005	D-4 ②
IC6006	D-3 ②
Adjustment	
C6004	F-2 ②
VR6001	E-2 ②
Connector	
P6001	A-3 ②
P6001	A-17 ②
P6002	C-3 ②
P6003	F-8 ②
P6004	F-8 ②
P6005	A-3 ②
P6006	F-7 ②
P6007	E-3 ②
P6008	F-2 ②
P6009	F-1 ②

ADDRESS INFORMATION
 ② ... COMPONENT SIDE
 ③ ... FOIL SIDE



3-26. MAIN (POWER, SERVO, SUB VIDEO, AUDIO, HI-FI AUDIO & SYSTEM CONTROL) C B A (VEP06716A)

POWER Section		
Connector		
P1002	B-17	⊙
P1004	E-17	⊙

ADDRESS INFORMATION
 ⊙ ... COMPONENT SIDE
 ⊙ ... FOIL SIDE

SERVO Section		
Transistor & Resistor		
QR2001	A-6	⊙
QR2002	A-6	⊙
QR2003	A-6	⊙
QR2004	A-6	⊙
QR2005	A-14	⊙
QR2006	D-2	⊙

Integrated Circuit		
IC2001	B-16	⊙
IC2002	B-5	⊙
IC2003	C-17	⊙
IC2004	B-3	⊙
IC2005	B-5	⊙

Test Point		
TP2004	B-2	⊙
TP2013	B-3	⊙

Adjustment		
VR2001	D-2	⊙

Connector		
P2001	A-4	⊙

ADDRESS INFORMATION
 ⊙ ... COMPONENT SIDE
 ⊙ ... FOIL SIDE

AUDIO Section		
Transistor		
Q4001	F-12	⊙
Q4002	E-12	⊙
Q4004	E-13	⊙
Q4005	D-12	⊙
Q4006	D-12	⊙
Q4007	E-11	⊙
Q4008	E-11	⊙
Q4009	E-11	⊙

Transistor & Resistor		
QR4002	E-11	⊙
QR4003	E-12	⊙
QR4005	F-12	⊙
QR4006	F-12	⊙
QR4007	E-12	⊙
QR4008	E-13	⊙

Integrated Circuit		
IC4001	E-11	⊙
IC4002	D-12	⊙
IC4003	E-13	⊙

Test Point		
TP4001	F-9	⊙
TP4002	E-9	⊙

Adjustment		
VR4001	E-7	⊙
VR4002	E-9	⊙

Connector		
P4001	D-9	⊙
P4001	D-11	⊙
P4002	D-9	⊙

ADDRESS INFORMATION
 ⊙ ... COMPONENT SIDE
 ⊙ ... FOIL SIDE

SUB VIDEO Section		
Transistor		
Q5001	B-9	⊙
Q5002	B-9	⊙
Q5003	D-7	⊙
Q5004	D-7	⊙
Q5005	C-13	⊙
Q5006	C-13	⊙
Q5007	B-13	⊙
Q5008	C-11	⊙
Q5009	B-13	⊙
Q5010	C-13	⊙
Q5015	B-12	⊙
Q5016	B-12	⊙
Q5017	C-12	⊙
Q5018	C-12	⊙
Q5019	A-13	⊙
Q5020	A-13	⊙

Transistor & Resistor		
QR5002	D-7	⊙
QR5006	C-7	⊙
QR5007	B-13	⊙
QR5008	C-14	⊙
QR5009	C-11	⊙
QR5010	B-14	⊙
QR5011	D-13	⊙
QR5013	B-13	⊙
QR5014	A-13	⊙
QR5017		

Integrated Circuit		
IC5001	C-8	⊙
IC5002	D-8	⊙
IC5003	A-13	⊙

Test Point		
TP5003	A-10	⊙
TP5004	A-7	⊙
TP5005	A-7	⊙

Adjustment		
VR5001	F-6	⊙
VR5002	E-6	⊙

Connector		
P5001	B-6	⊙
P5002	E-6	⊙
P5003	B-8	⊙

ADDRESS INFORMATION
 ⊙ ... COMPONENT SIDE
 ⊙ ... FOIL SIDE

HI-FI AUDIO Section		
Transistor		
Q4501	C-14	⊙
Q4502	C-14	⊙
Q4503	C-15	⊙
Q4504	C-14	⊙
Q4507	F-13	⊙
Q4508	F-13	⊙
Q4509	C-15	⊙
Q4510	C-14	⊙

Transistor & Resistor		
QR4501	D-14	⊙
QR4502	F-15	⊙
QR4503	E-15	⊙
QR4504	F-15	⊙
QR4506	E-7	⊙

Integrated Circuit		
IC4501	E-14	⊙
IC4502	D-14	⊙

Test Point		
TP4505	F-7	⊙
TP4507	F-5	⊙

Adjustment		
VR4501	E-5	⊙
VR4502	F-6	⊙
VR4503	F-5	⊙
VR4504	F-5	⊙
VR4505	F-5	⊙
VR4506	F-5	⊙

ADDRESS INFORMATION
 ⊙ ... COMPONENT SIDE
 ⊙ ... FOIL SIDE

SYSTEM CONTROL Section		
Transistor		
Q6001	B-14	⊙
Q6002	D-7	⊙
Q6003	D-7	⊙
Q6004	F-17	⊙

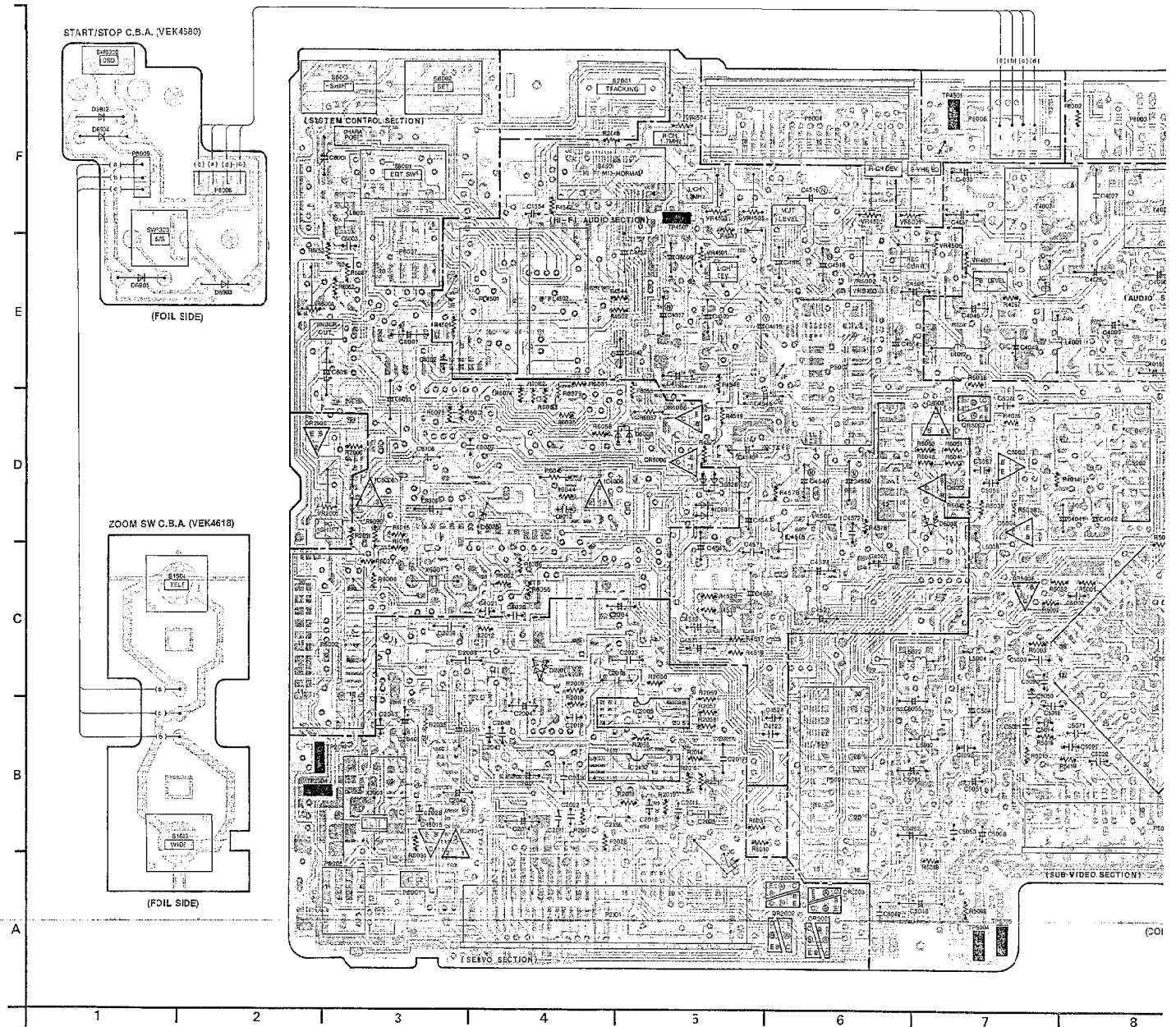
Transistor & Resistor		
QR6001	F-16	⊙
QR6002	F-13	⊙
QR6003	B-15	⊙
QR6004	D-15	⊙
QR6005	D-5	⊙
QR6006	D-5	⊙
QR6007	F-13	⊙
QR6008	F-16	⊙
QR6010	C-16	⊙
QR6011	F-13	⊙
QR6012	D-17	⊙
QR6013	C-16	⊙
QR6014	F-17	⊙
QR6015	A-3	⊙

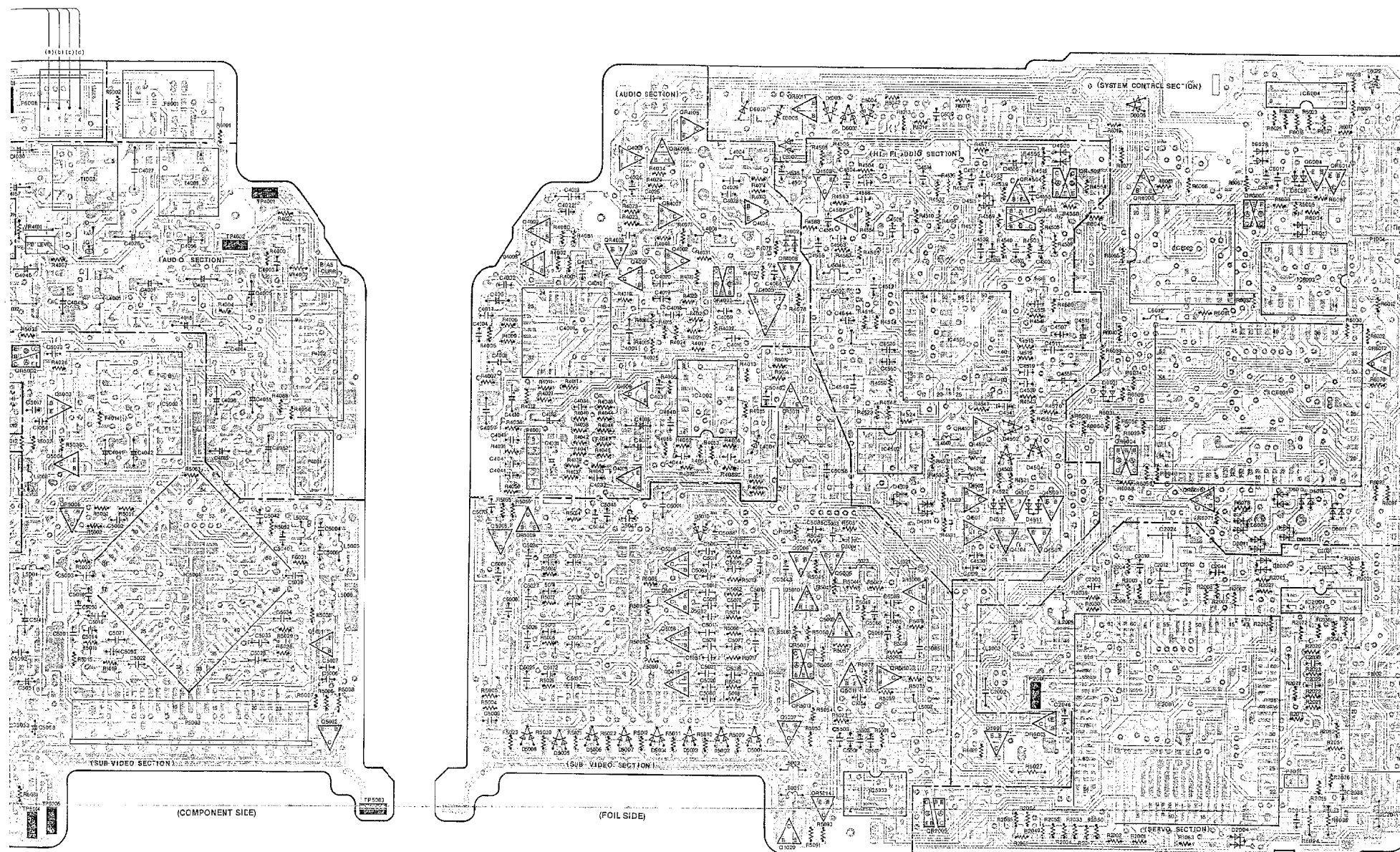
Integrated Circuit		
IC6001	D-17	⊙
IC6002	E-16	⊙
IC6003	E-17	⊙
IC6004	F-17	⊙
IC6005	D-4	⊙
IC6006	D-3	⊙

Adjustment		
C6004	F-2	⊙
VR6001	E-2	⊙

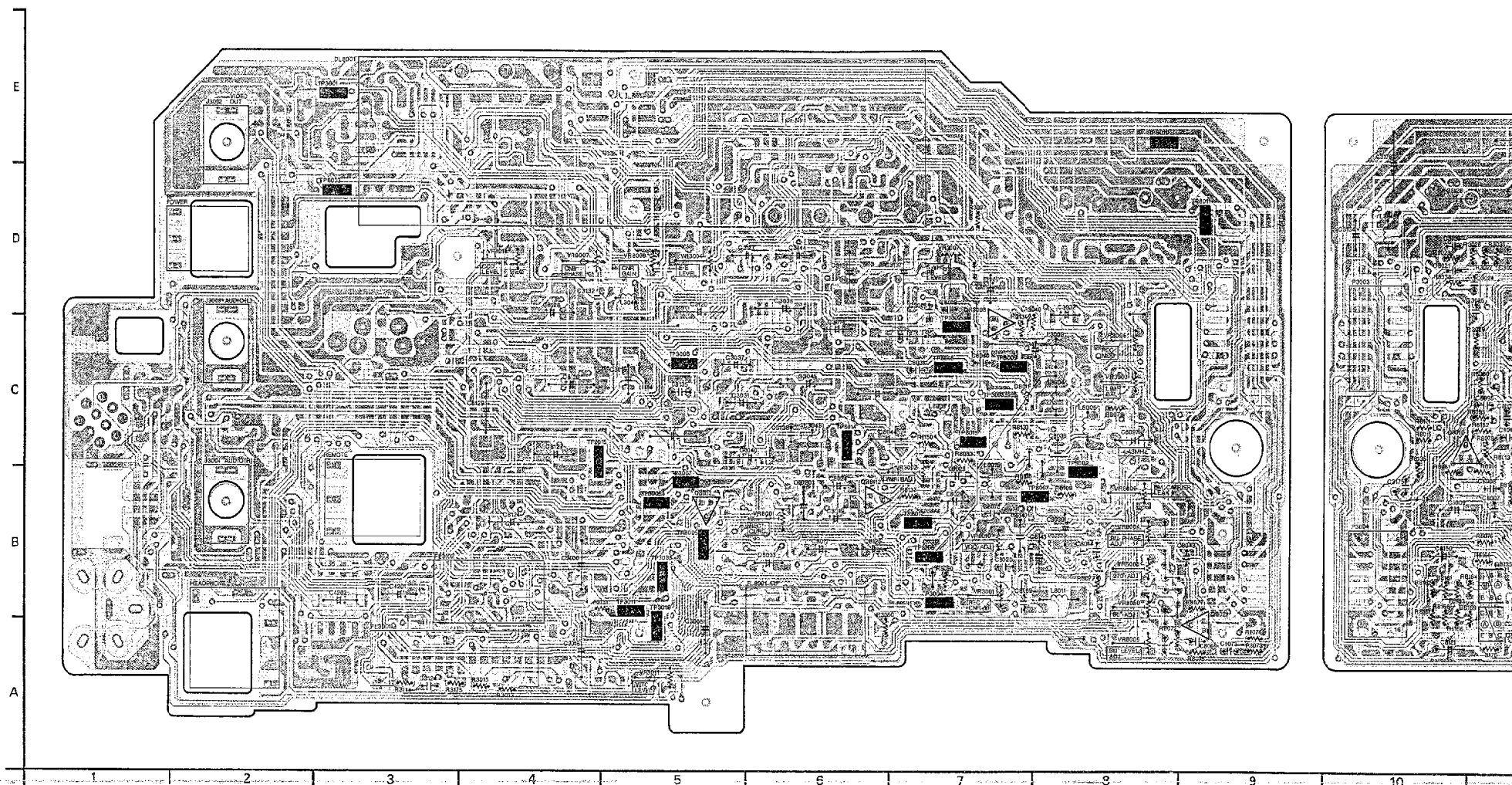
Connector		
P6001	A-3	⊙
P6001	A-17	⊙
P6002	C-3	⊙
P6003	F-8	⊙
P6004	F-8	⊙
P6005	A-3	⊙
P6006	F-7	⊙
P6007	E-3	⊙
P6008	F-2	⊙
P6009	F-1	⊙

ADDRESS INFORMATION
 ⊙ ... COMPONENT SIDE
 ⊙ ... FOIL SIDE

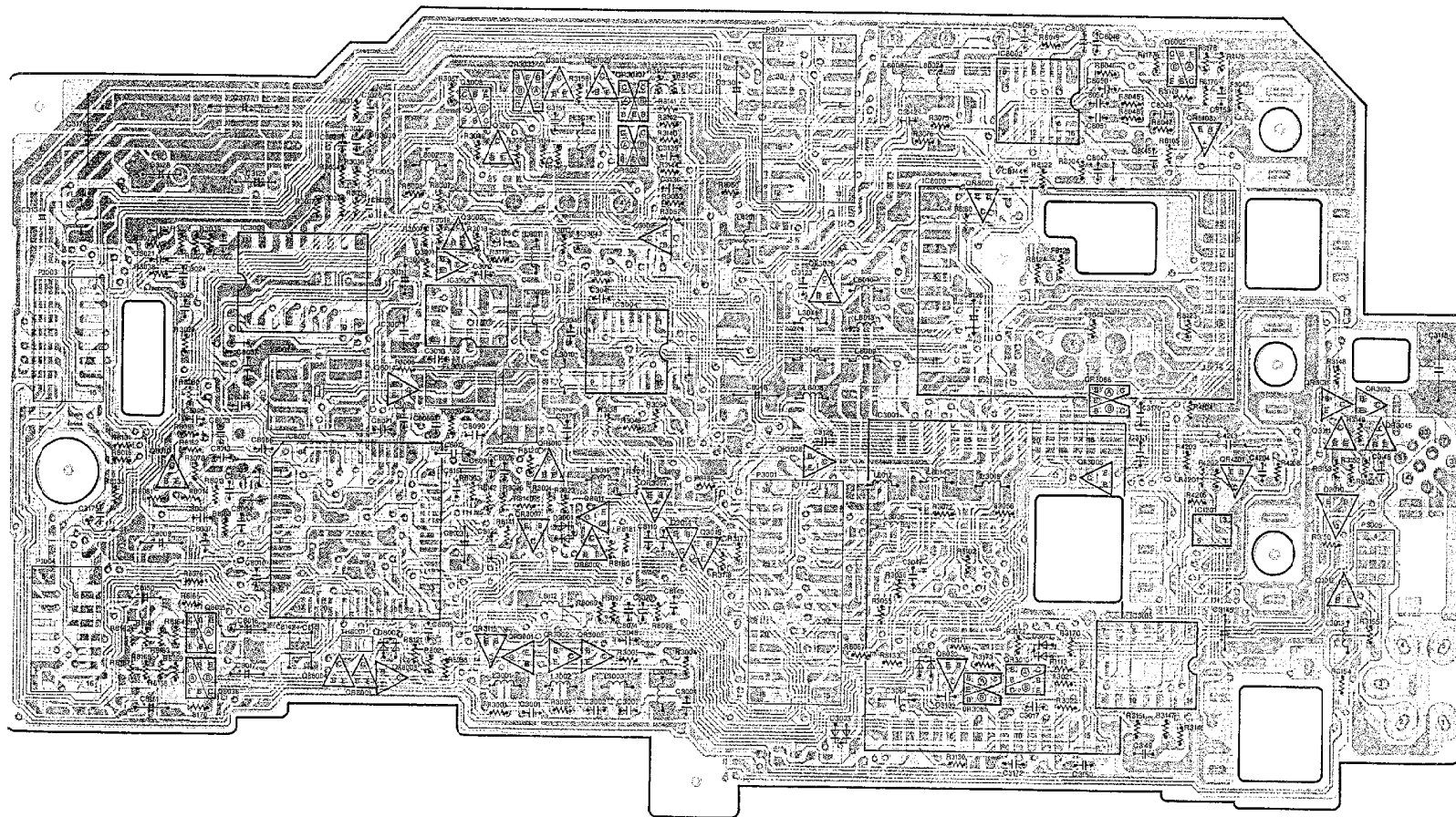




3-27. LUMINANCE & CHROMINANCE C.B.A. (VEP03797A)



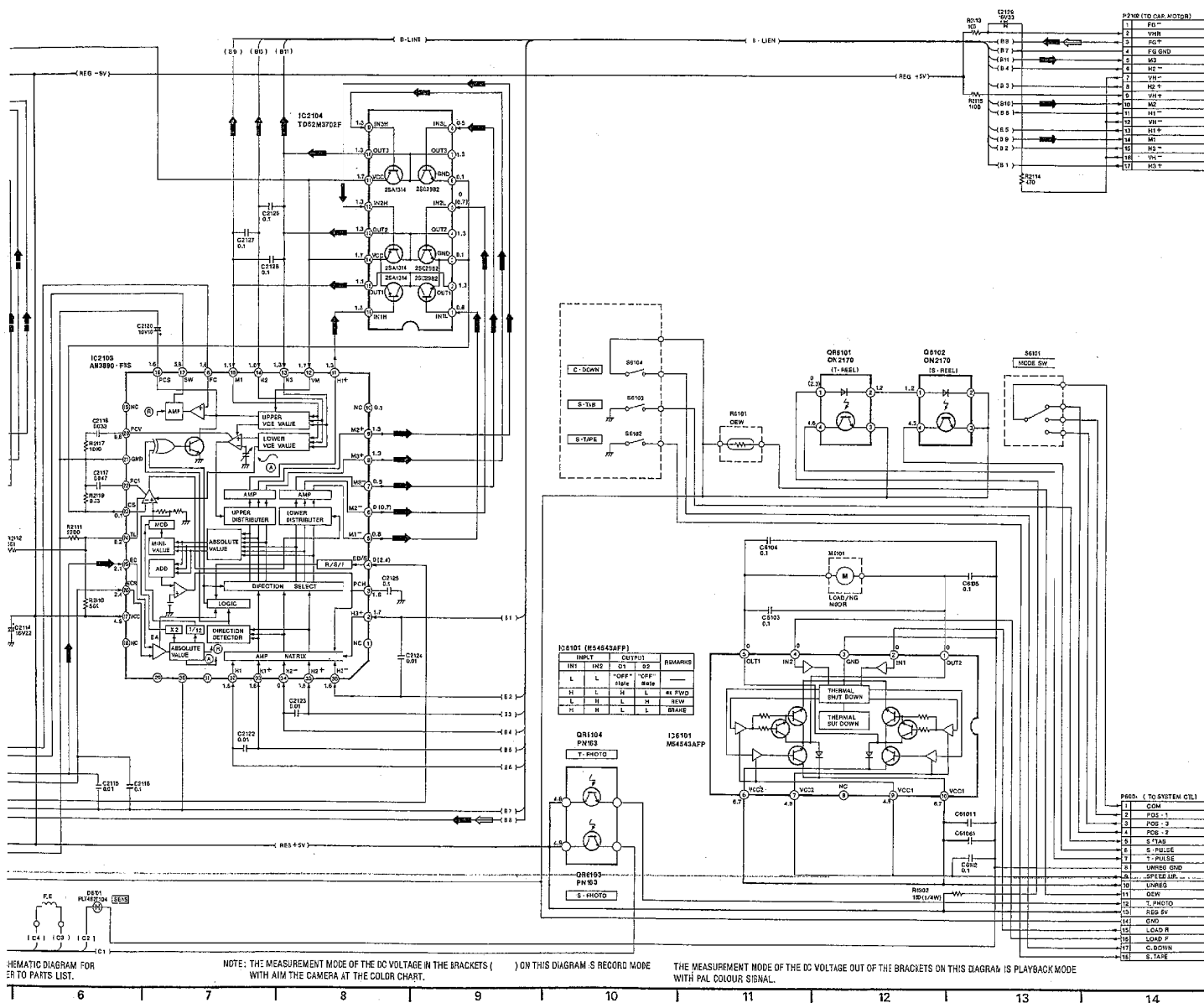
Back Page:
MAIN C.B.A. Section



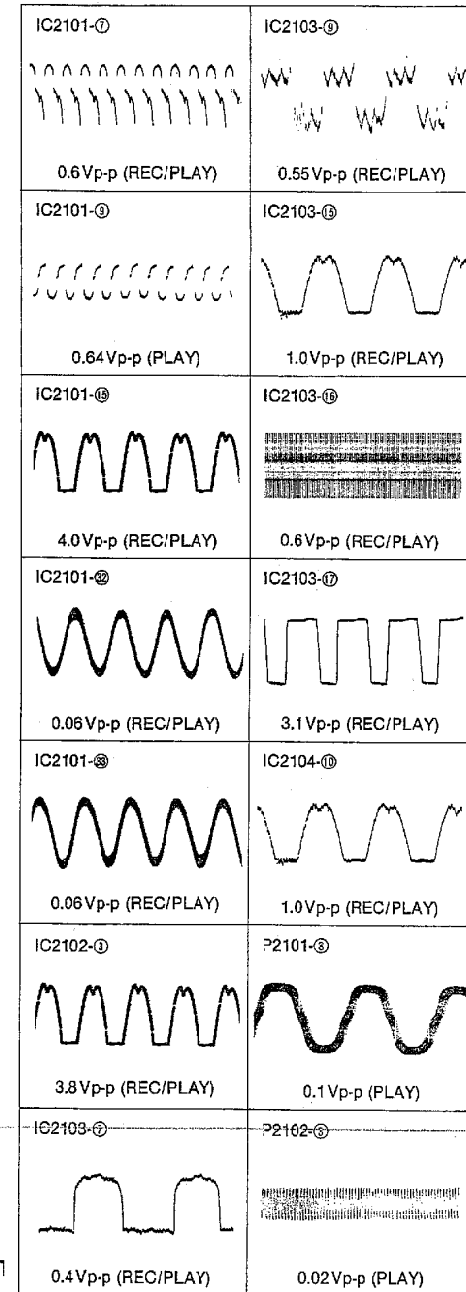
LUMINANCE & CHROMINANCE C.B.A.				
Transistor		IC6001		C-11 ①
Q3001	D-12 ①	IC6002	E-16 ①	
Q3002	D-12 ①	IC6003	D-15 ①	
Q3005	E-12 ①	Test Point		
Q3007	E-12 ①	TP3001	E-3 ①	
Q3008	E-12 ①	TP3002	C-7 ①	
Q3009	D-13 ①	TP3003	C-7 ①	
Q3010	B-17 ①	TP3004	B-7 ①	
Q3011	C-17 ①	TP3005	B-5 ①	
Q3012	E-17 ①	TP3006	B-5 ①	
Q3013	E-13 ①	TP3007	B-5 ①	
Q3014	B-14 ①	TP3008	C-5 ①	
Q3015	E-14 ①	TP3009	A-5 ①	
Q8010	C-11 ①	TP3010	B-5 ①	
Q8011	E-13 ①	TP3011	B-5 ①	
Q8013	E-5 ①	TP3012	D-3 ①	
Q8014	C-12 ①	TP3013	B-7 ①	
Q8030	E-15 ①	TP3014	B-7 ①	
Q8035	B-11 ①	TP3015	B-6 ①	
Q8036	A-11 ①	TP3016	C-7 ①	
Transistor & Resistor		Adjustment		
QR3001	B-13 ①	VR3001	C-8 ①	
QR3002	B-13 ①	VR3002	B-7 ①	
QR3003	B-13 ①	VR3003	C-7 ①	
QR3007	B-13 ①	VR3004	C-8 ①	
QR3008	D-7 ①	VR3005	D-5 ①	
QR3010	B-18 ①	VR3006	C-8 ①	
QR3015	B-12 ①	VR3007	D-7 ①	
QR3026	D-14 ①	VR3011	A-5 ①	
QR3027	D-13 ①	VR3012	B-6 ①	
QR3028	C-14 ①	VR3013	B-8 ①	
QR3029	E-13 ①	VR3014	A-5 ①	
QR3031	C-17 ①	VR3015	D-5 ①	
QR3032	C-18 ①	VR3016	D-4 ①	
QR3033	E-13 ①	VR3017	B-8 ①	
QR3040	E-13 ①	VR3018	B-8 ①	
QR3045	C-18 ①	VR3019	B-7 ①	
QR3065	A-15 ①	VR3020	B-8 ①	
QR3066	C-16 ①	VR3021	B-8 ①	
QR3067	C-13 ①	VR3022	B-8 ①	
QR4201	C-17 ①	VR3023	B-8 ①	
QR8003	A-12 ①	VR3024	B-8 ①	
QR8004	A-12 ①	VR3025	B-8 ①	
QR8005	A-12 ①	VR3026	B-8 ①	
QR8007	B-13 ①	VR3027	B-8 ①	
QR8008	E-17 ①	VR3028	B-8 ①	
QR8010	C-13 ①	VR3029	B-8 ①	
QR8012	B-3 ①	VR3030	B-8 ①	
QR8020	D-15 ①	Connector		
Integrated Circuit		F3001	C-14 ①	
IC3001	C-15 ①	F3002	E-14 ①	
IC3002	D-12 ①	F3003	C-10 ①	
IC3003	D-11 ①	F3004	B-10 ①	
IC3004	D-13 ①	F3005	C-18 ①	
IC3005	B-17 ①			

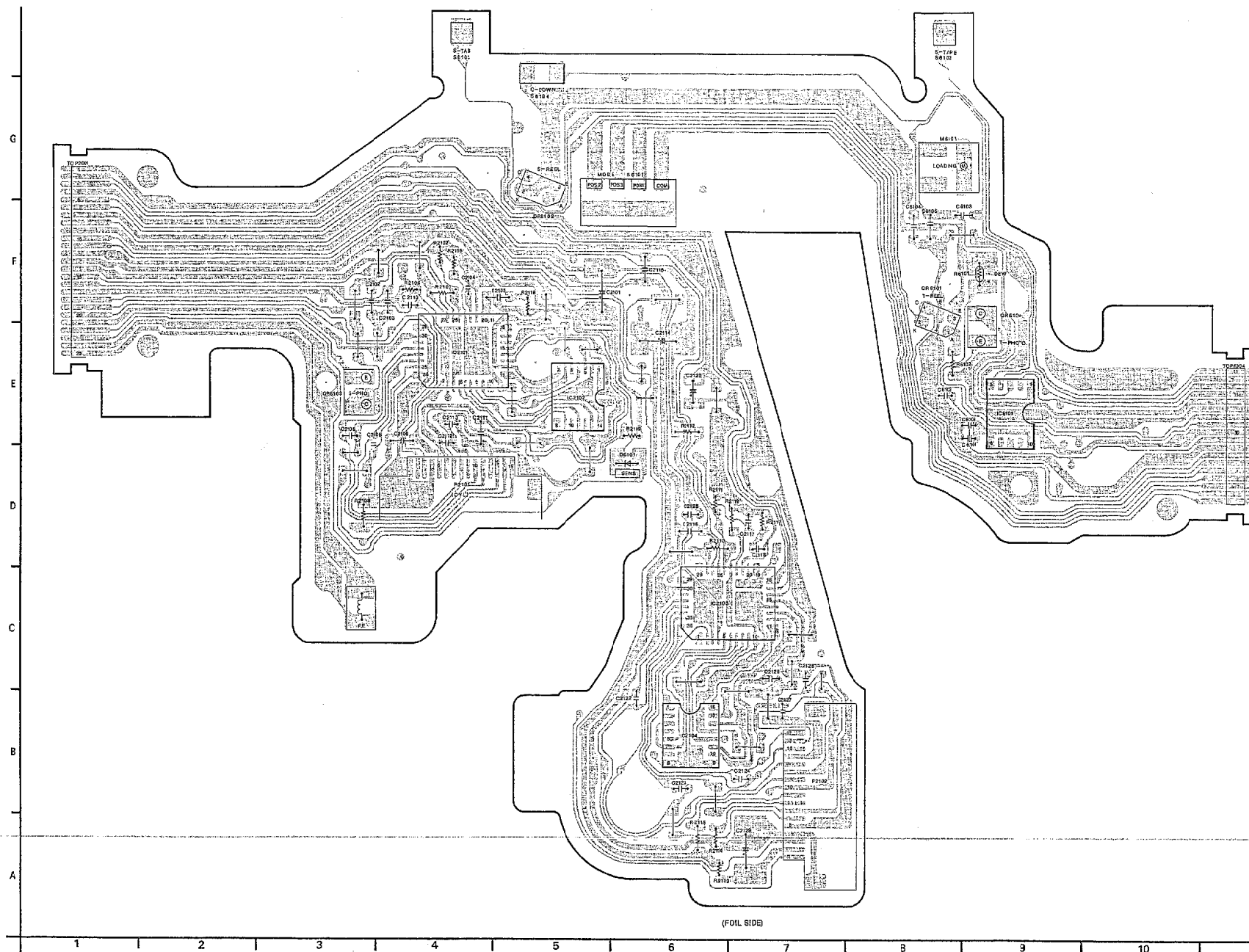
ADDRESS INFORMATION
 ①... COMPONENT SIDE
 ②... FOIL SIDE

)P  CYLINDER SERVO SPEED LOOP
)P  CYLINDER SERVO PHASE LOOP

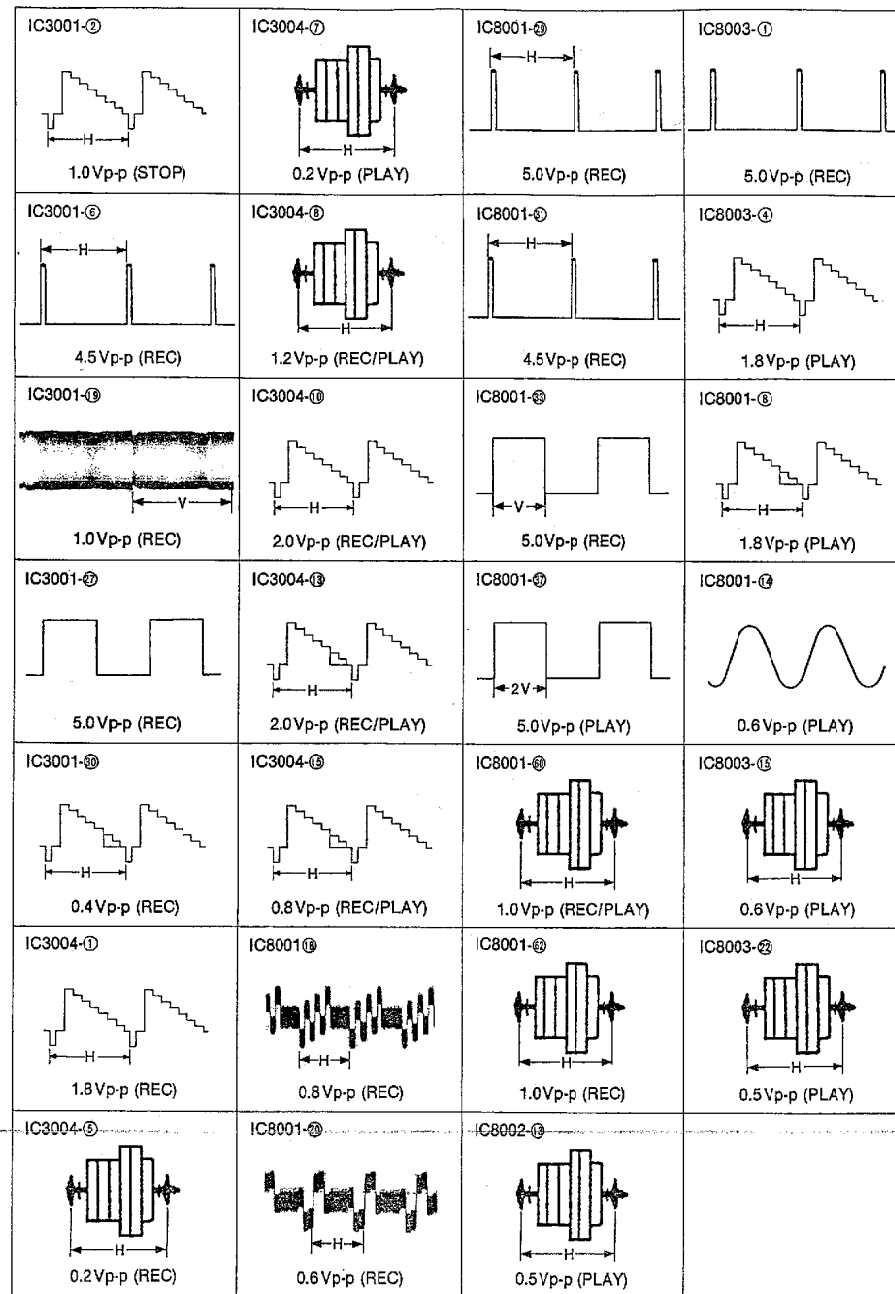


SUB SERVO CIRCUIT WAVEFORM





LUMINANCE & CHROMINANCE CIRCUIT WAVEFORM

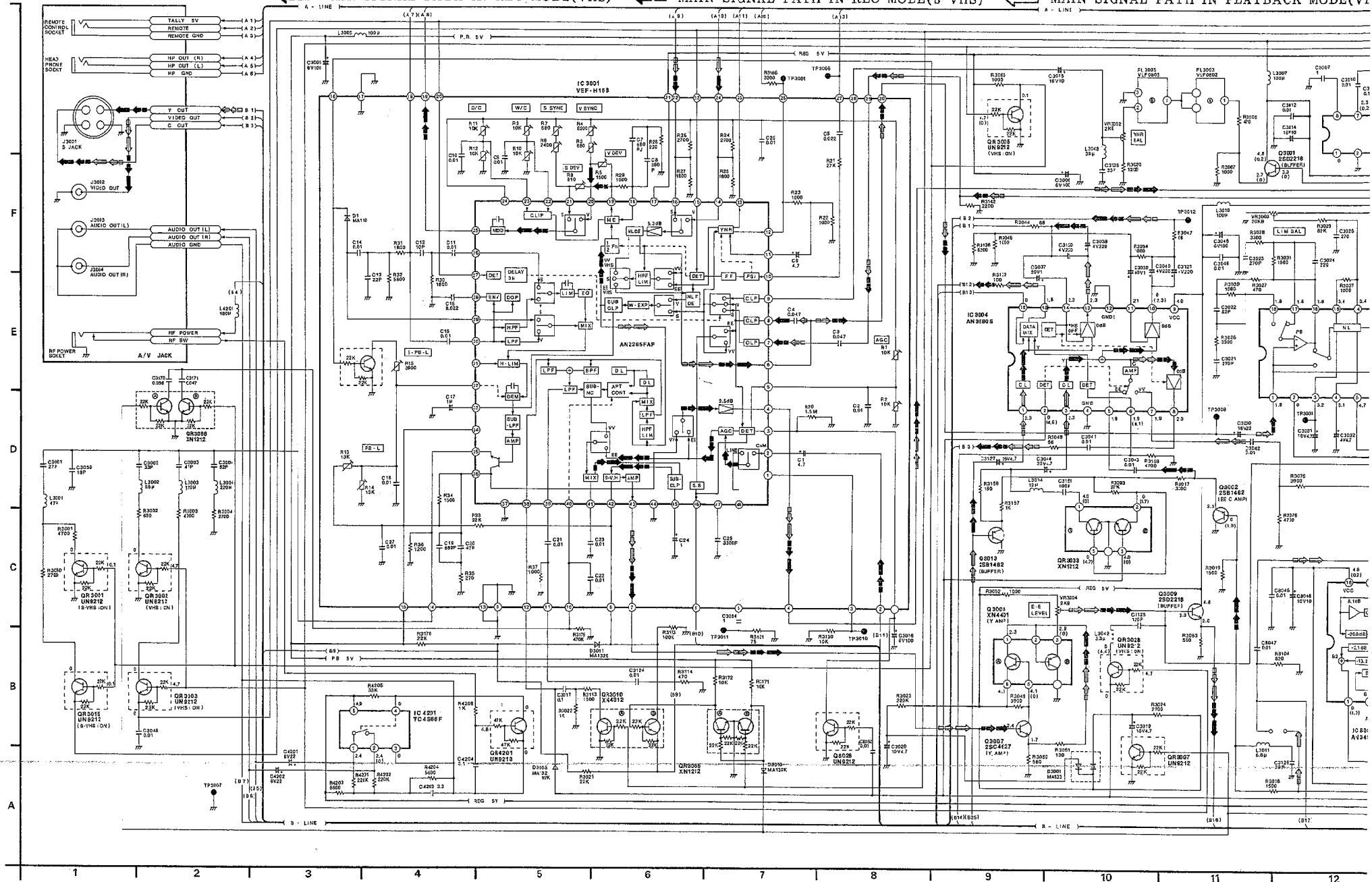


3-30 LUMINANCE & CHROMINANCE SCHEMATIC DIAGRAM

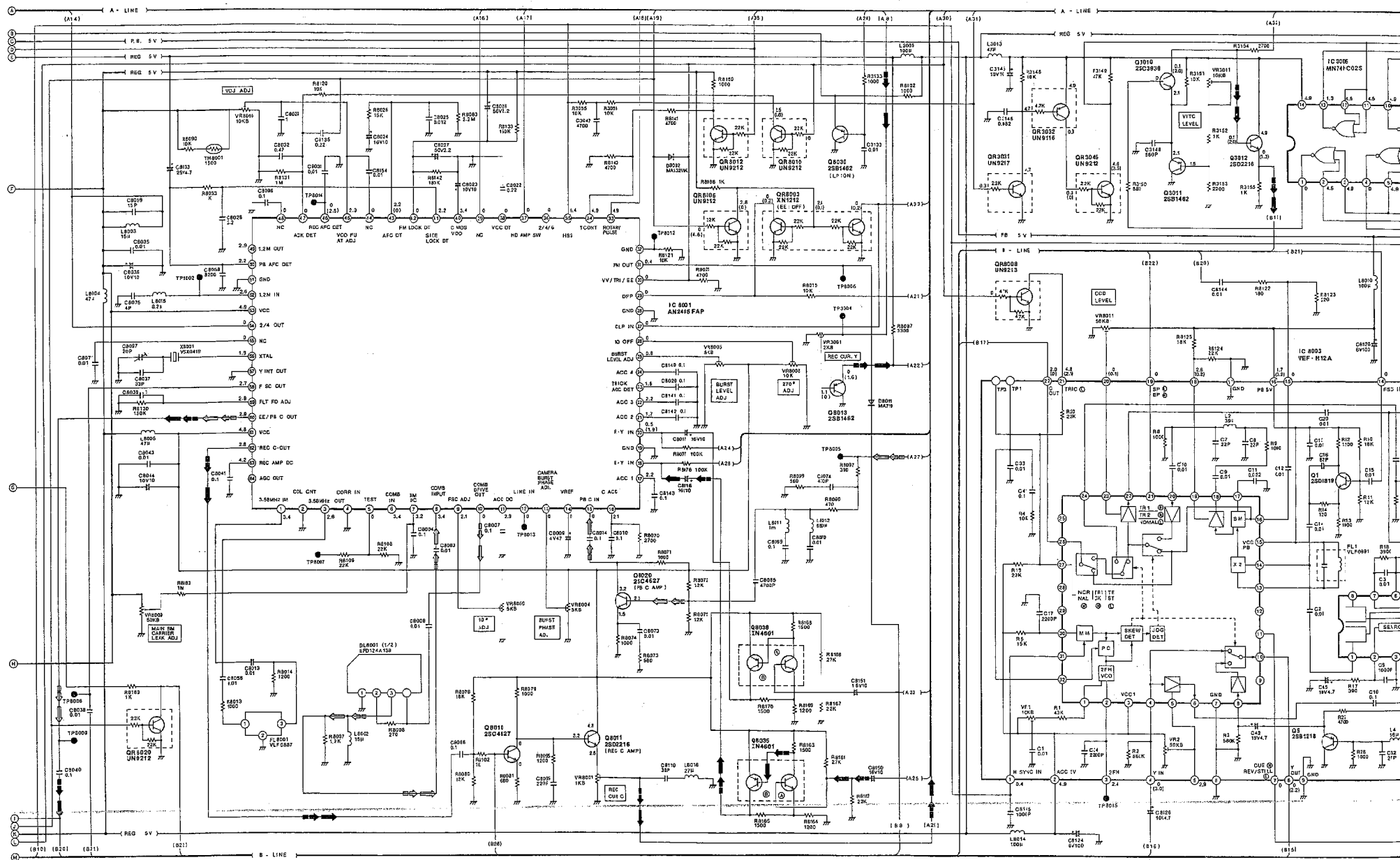
MAIN SIGNAL PATH IN REC MODE(VHS)

MAIN SIGNAL PATH IN REC MODE(S-VHS)

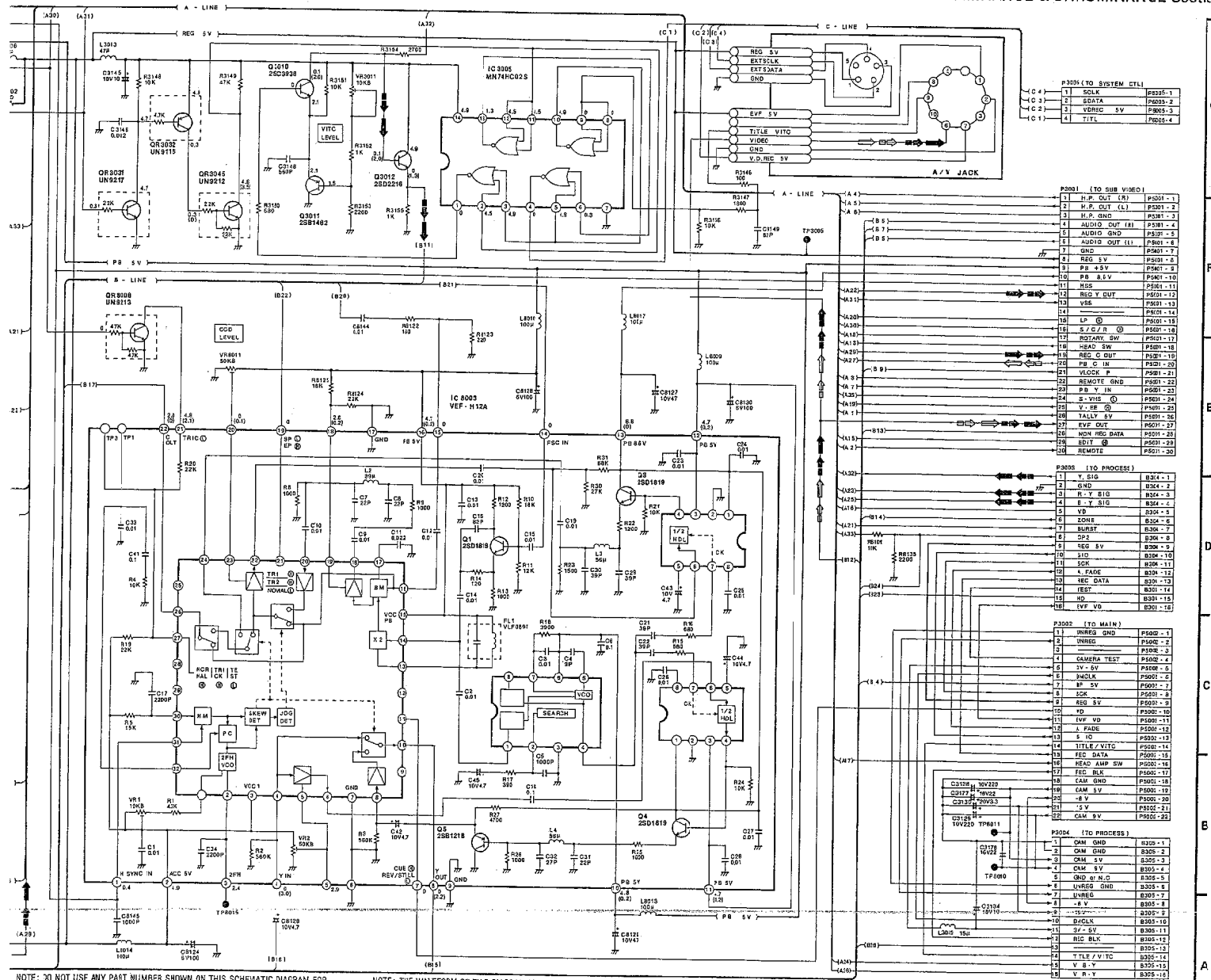
MAIN SIGNAL PATH IN PLAYBACK MODE(VF)

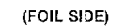
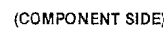






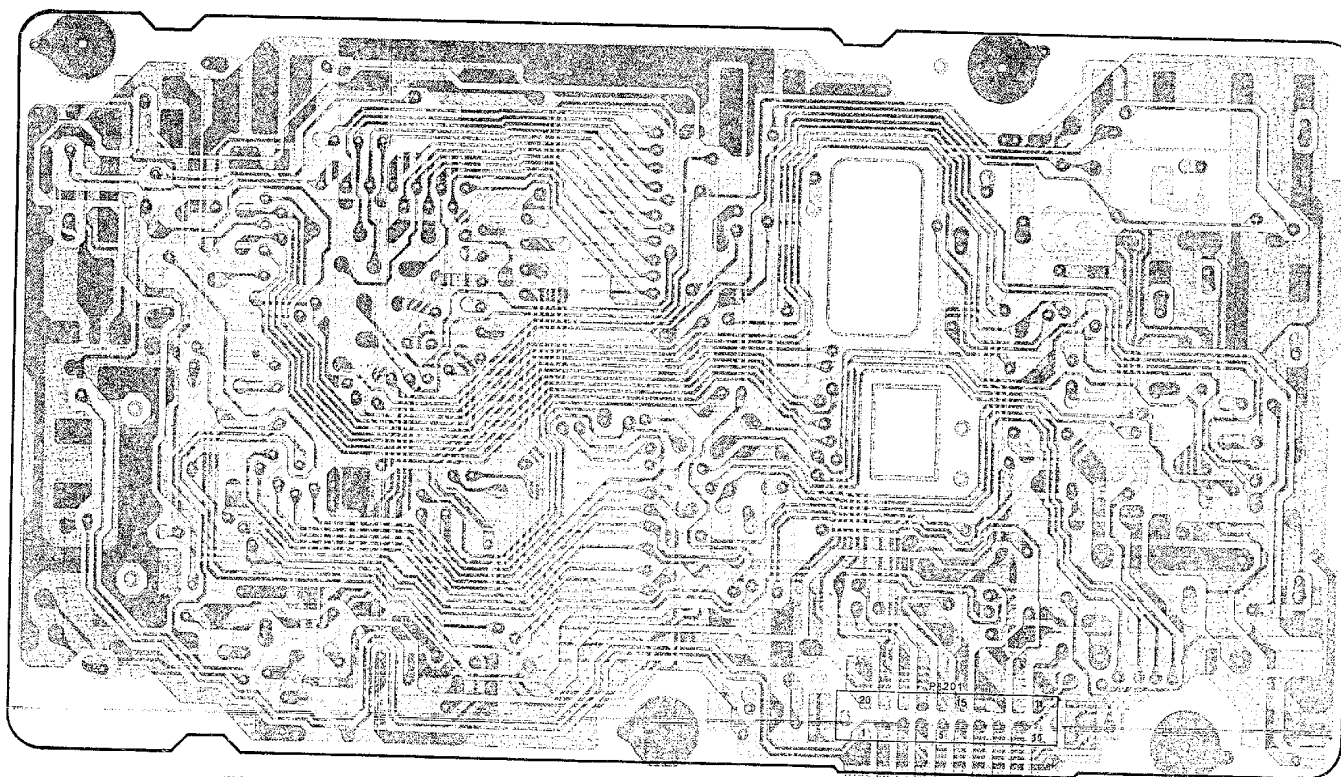
LUMINANCE & CHROMINANCE Section



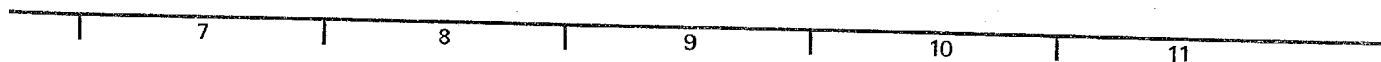


VTR OPERATION C.S.A.		
Transistor		
Q5201	B-8	Ⓢ
Q6202	A-6	Ⓢ
Q6203	A-6	Ⓢ
Transistor & Resistor		
QR6204	A-3	Ⓢ
QR6205	B-2	Ⓢ
QR6207	A-4	Ⓢ
Integrated Circuit		
IC6201	B-5	Ⓢ
IC6202	A-1	Ⓢ
IC6203	A-5	Ⓢ
IC6204	B-4	Ⓢ
Adjustment		
C6202	B-2	Ⓢ
Connectors		
P6201	A-10	Ⓢ

ADDRESS INFORMATION
 Ⓢ ... COMPONENT SIDE
 Ⓢ ... FOIL SIDE



(FOIL SIDE)

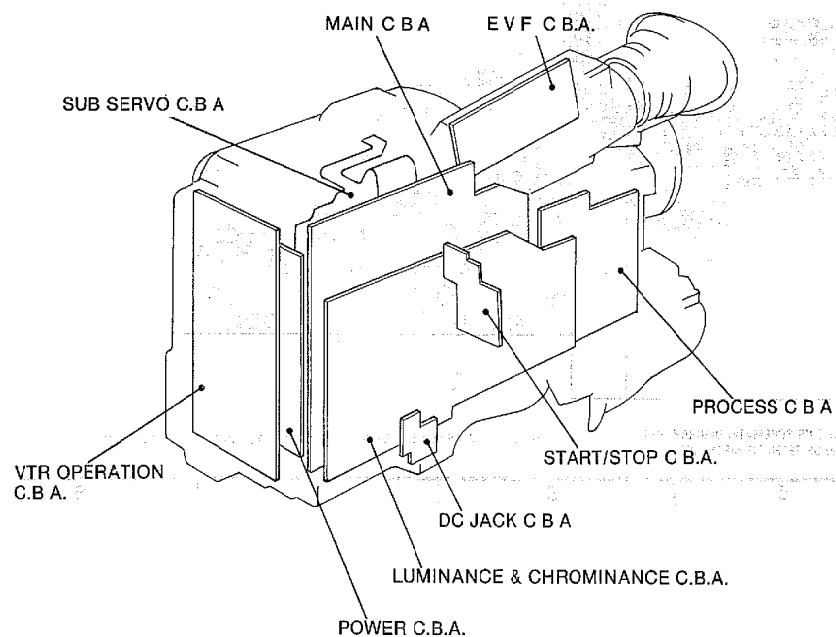
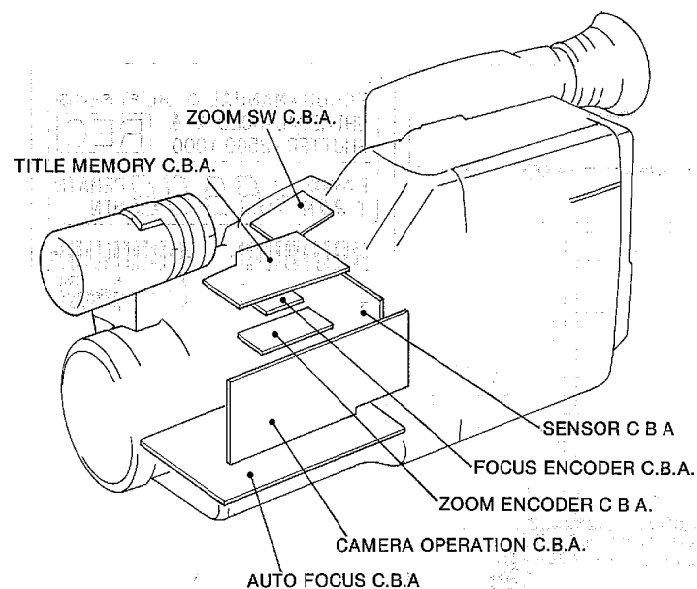


TROYA, PHAOS, THERIO 251

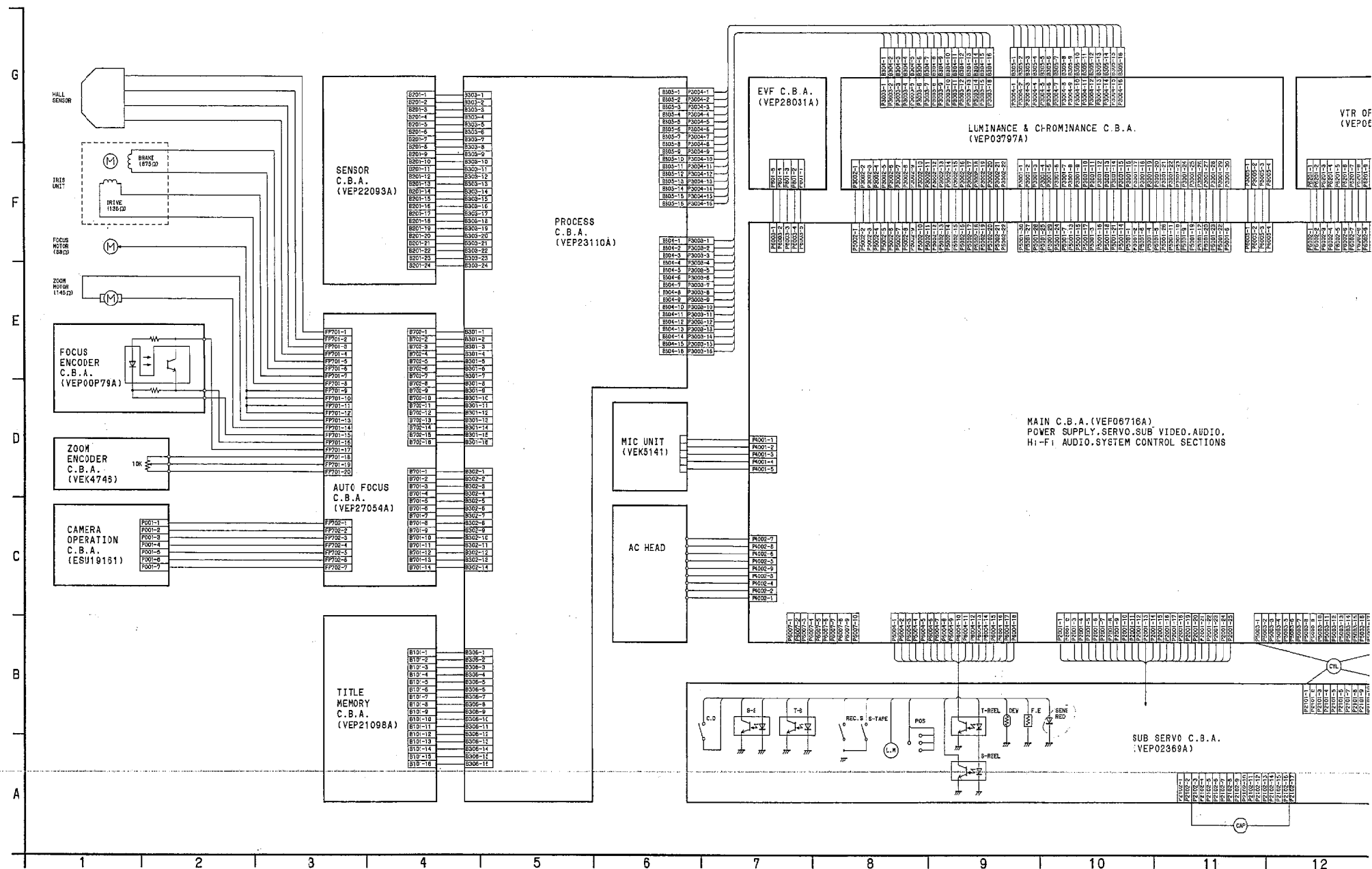


3-33 CIRCUIT BOARD LAYOUT

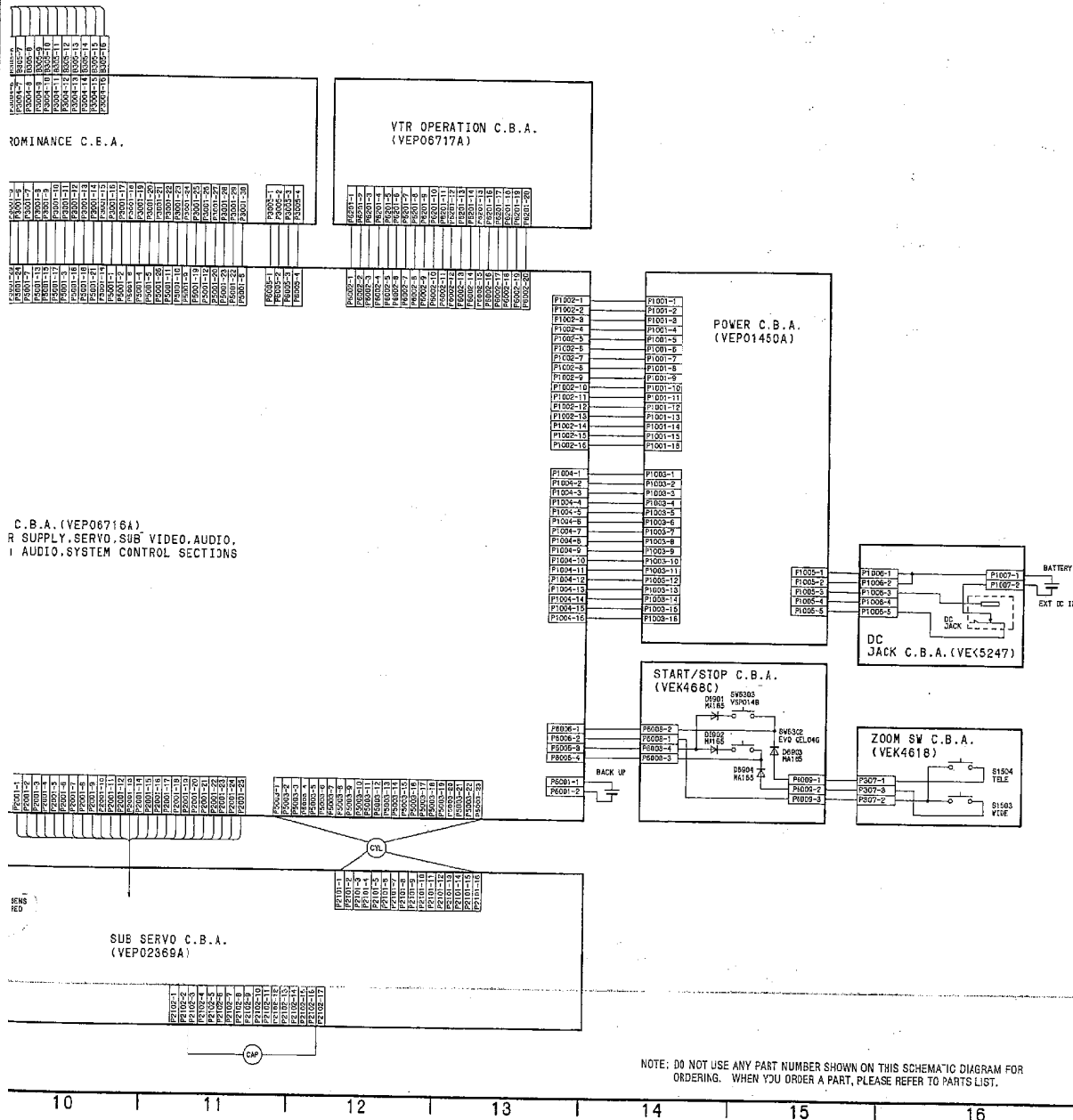
MAZDA MOTOR CORP. VTR TAPE RECORDER



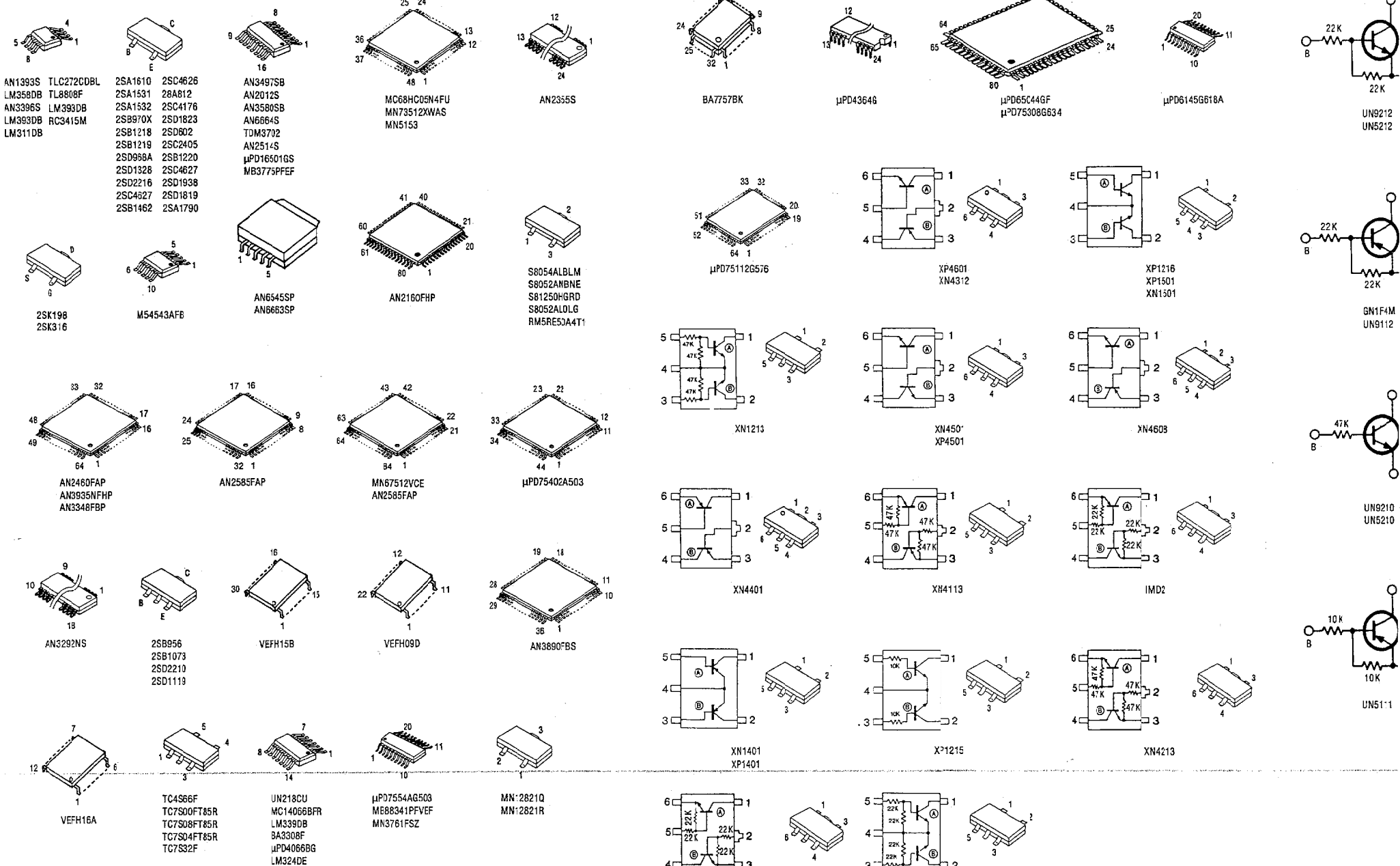
3-34. INTERCONNECTION SCHEMATIC DIAGRAM

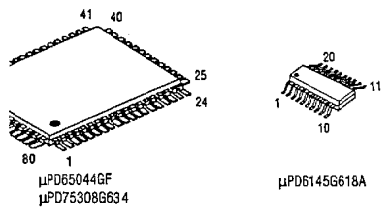


INTERCONNECTION Section

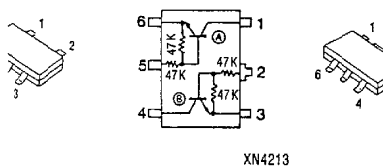
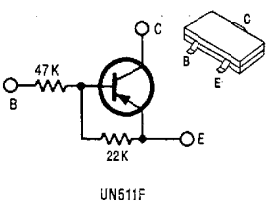
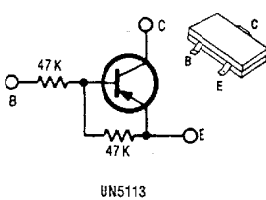
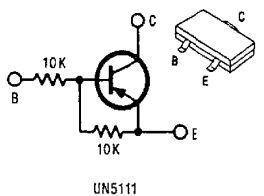
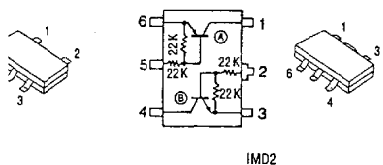
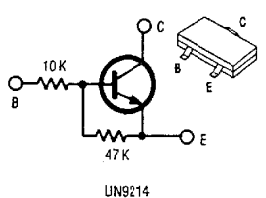
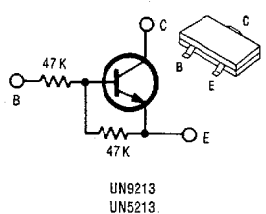
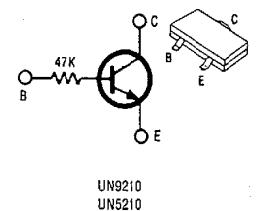
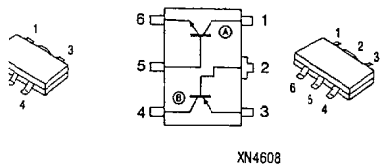
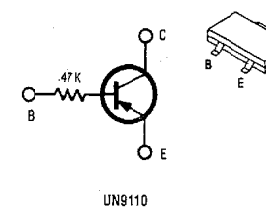
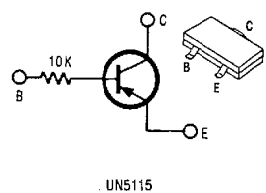
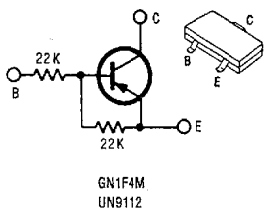
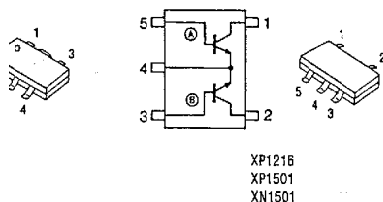
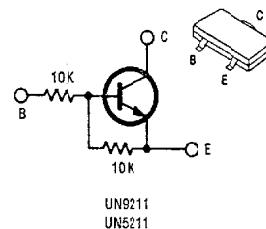
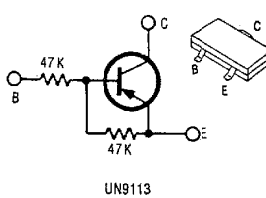
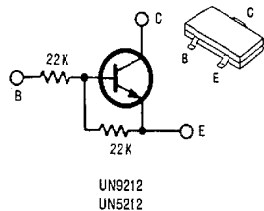


3-35. ICs & TRs INFORMATION





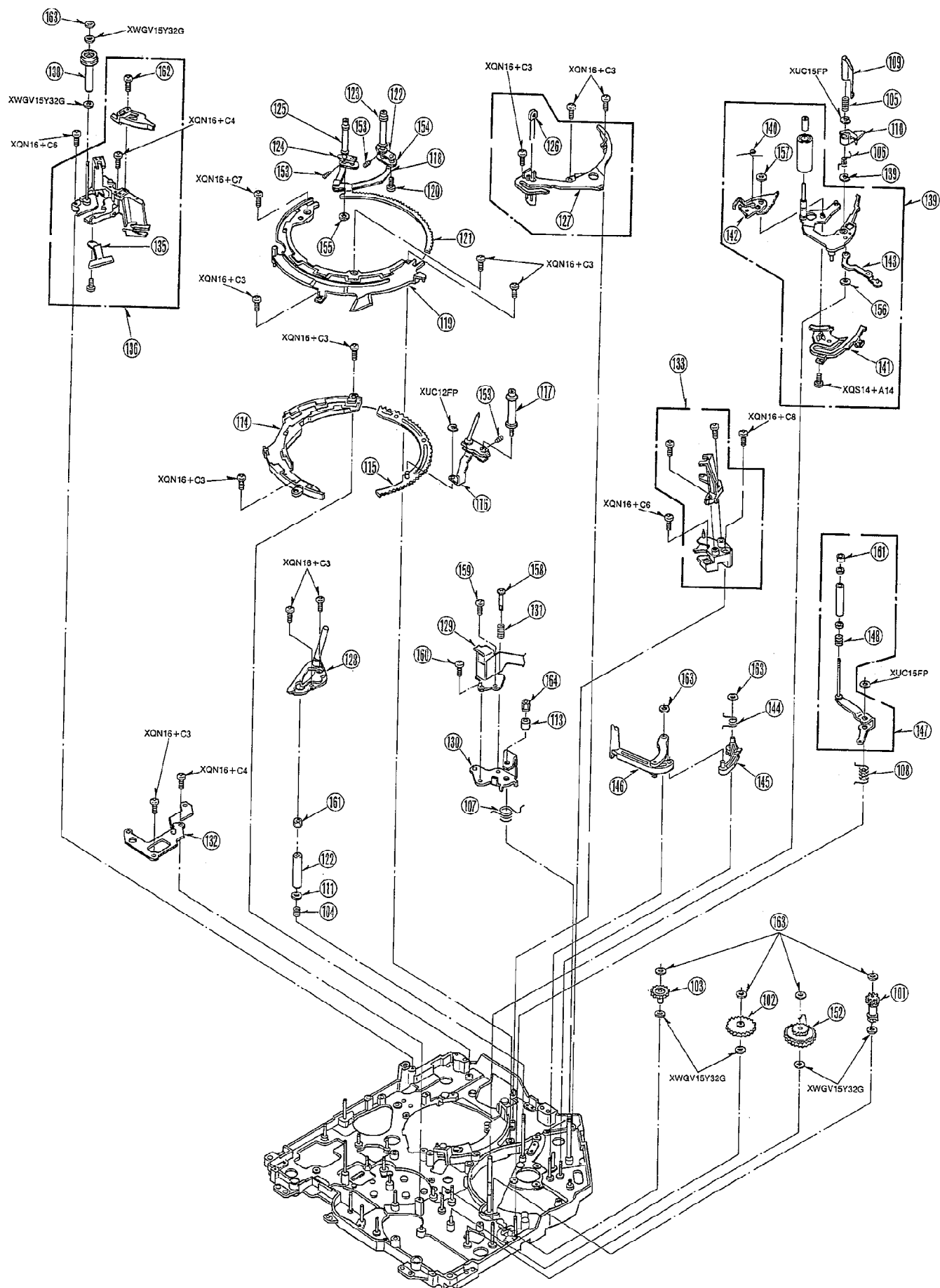
μPD6145G618A



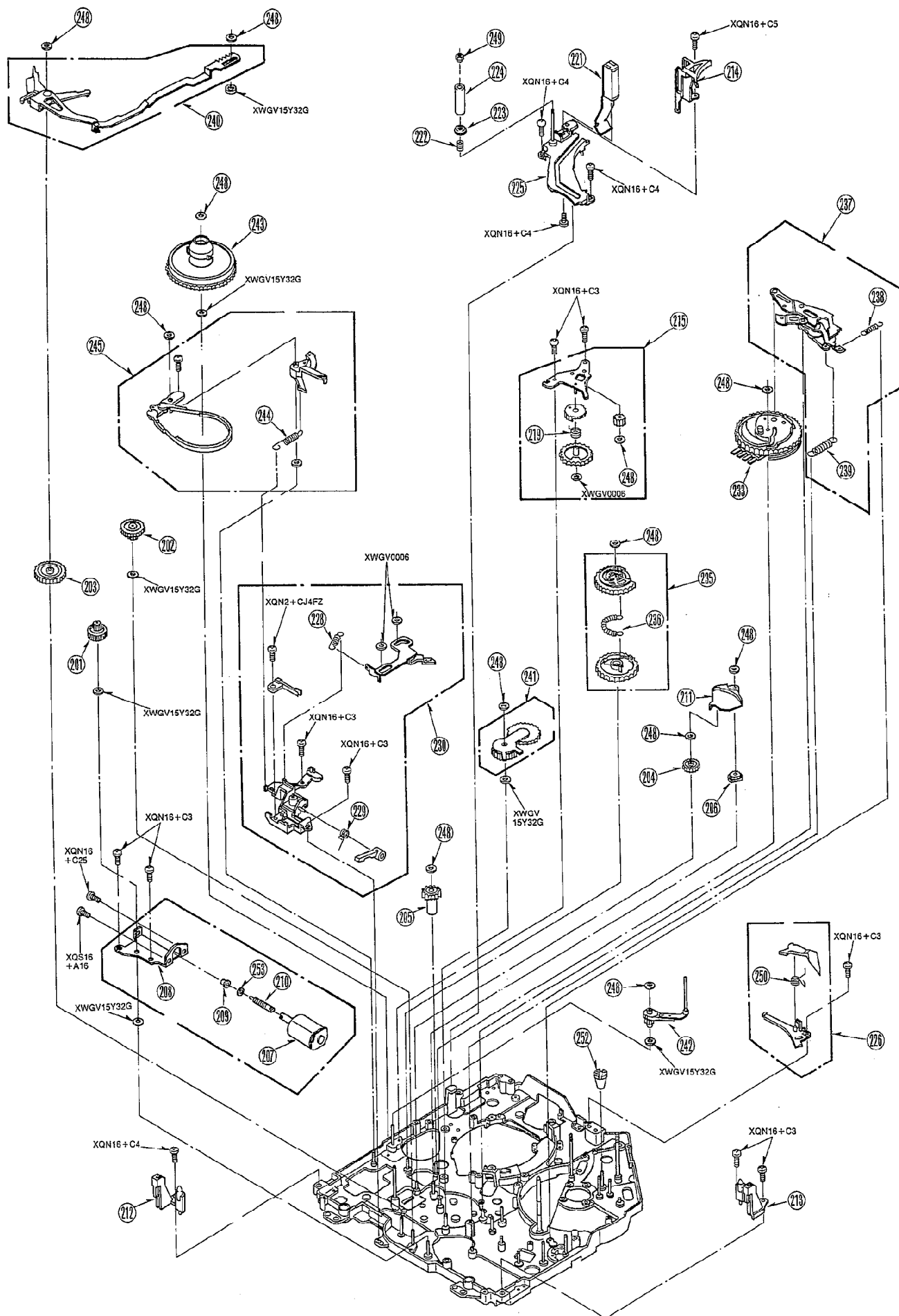
4.1. EXPLODED VIEWS



② VTR MECHANISM SECTION (2)

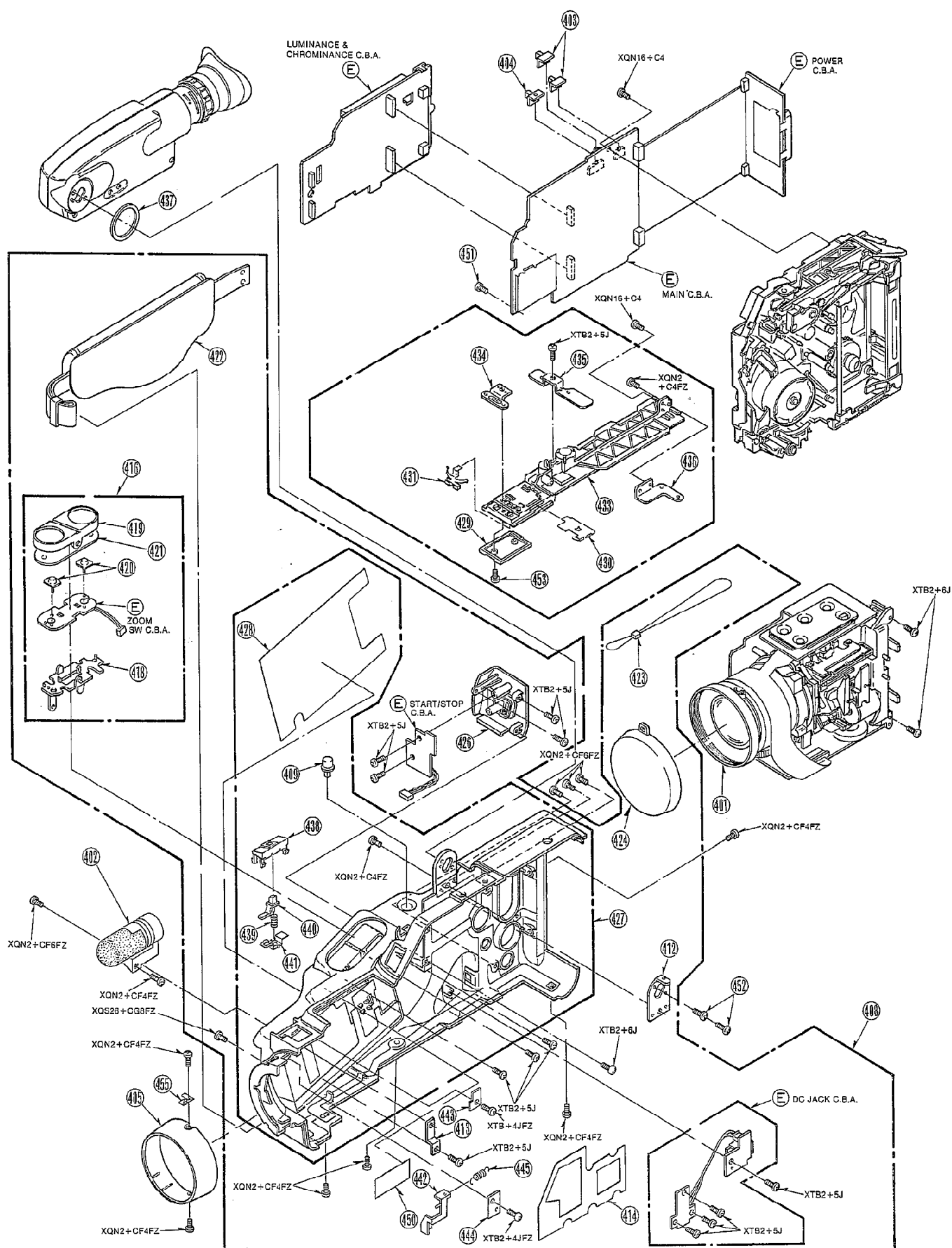


③ VTR MECHANISM SECTION (3)

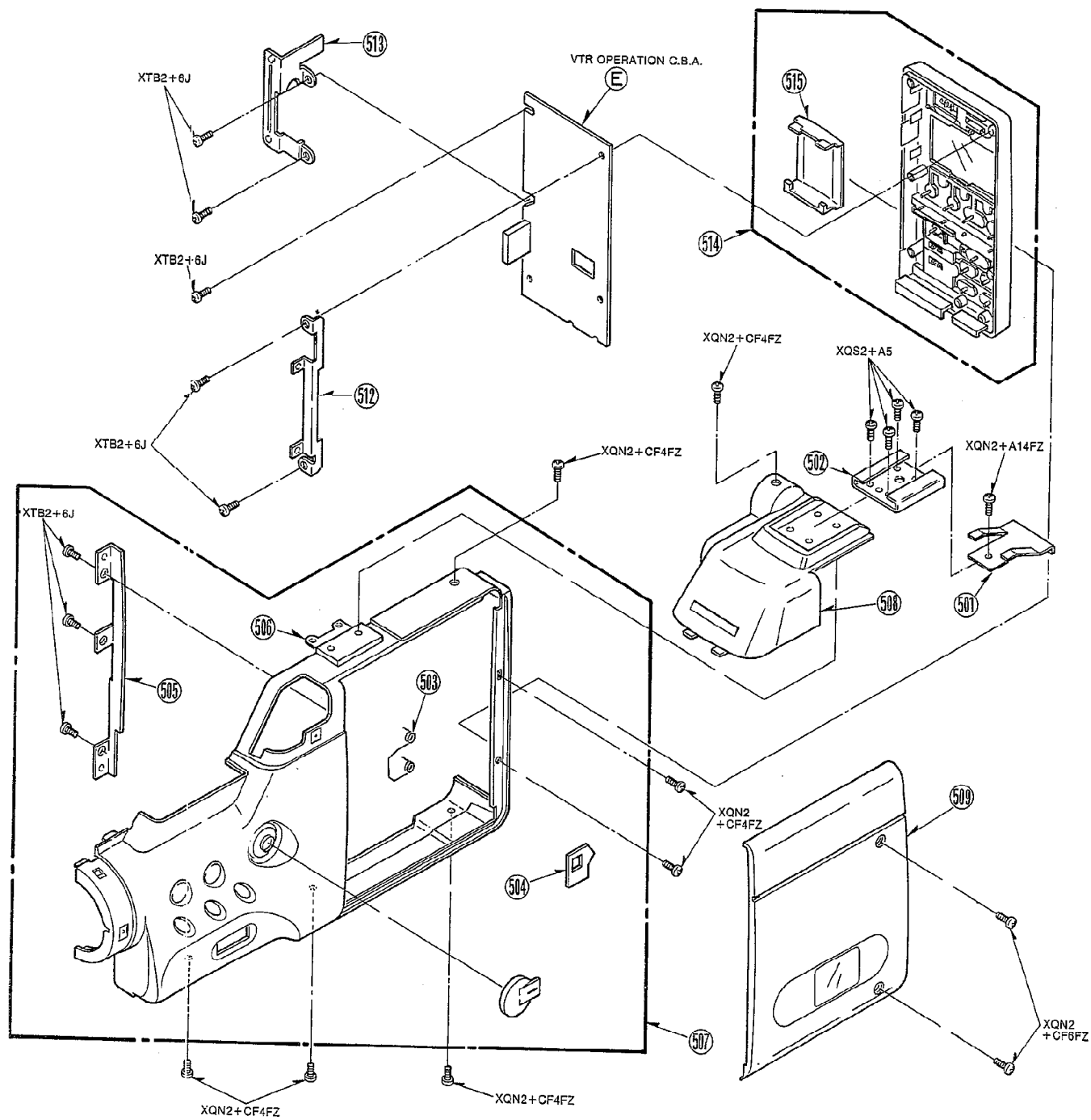


4

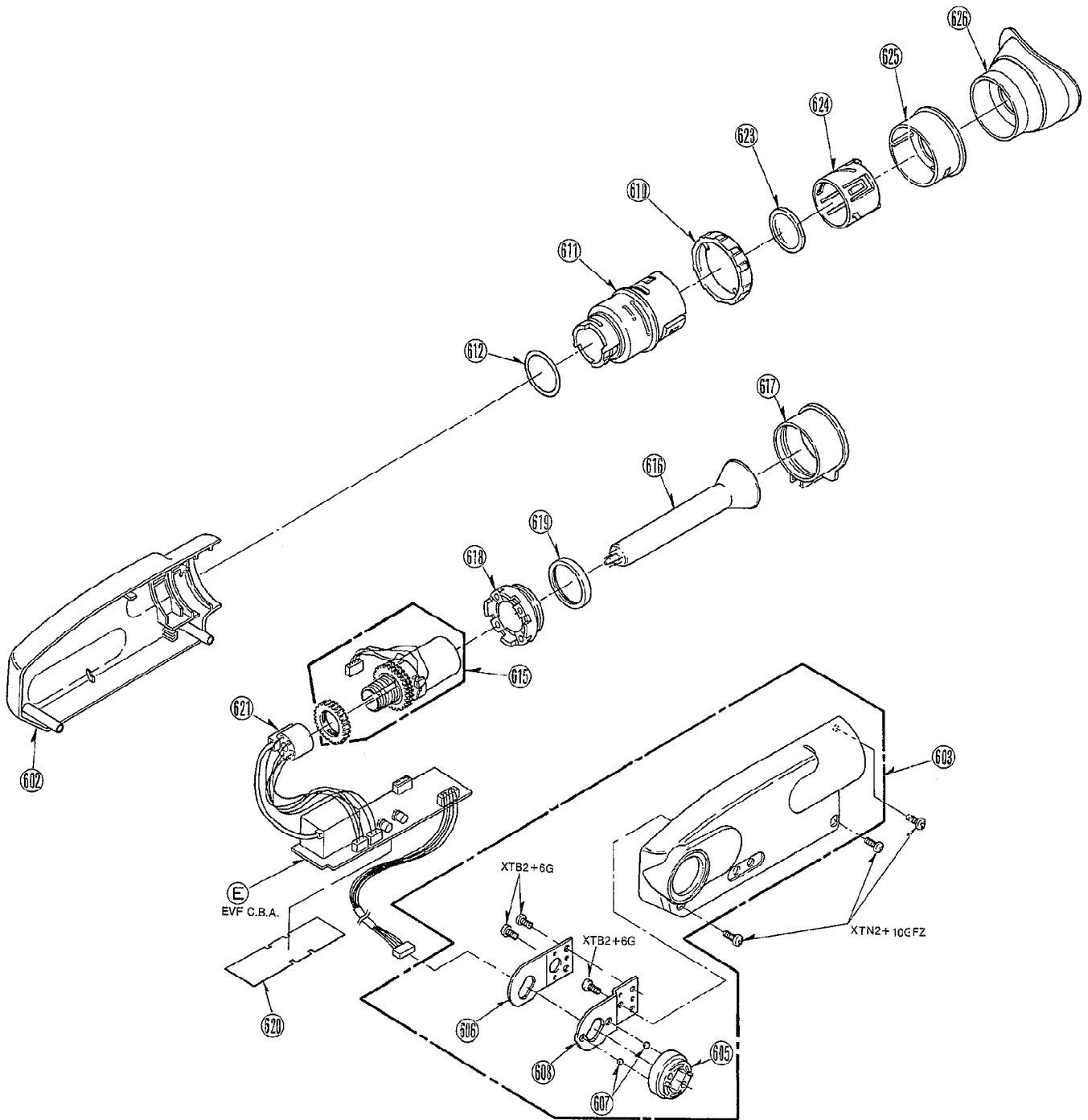
5 FRAME & CASING PARTS SECTION (1)



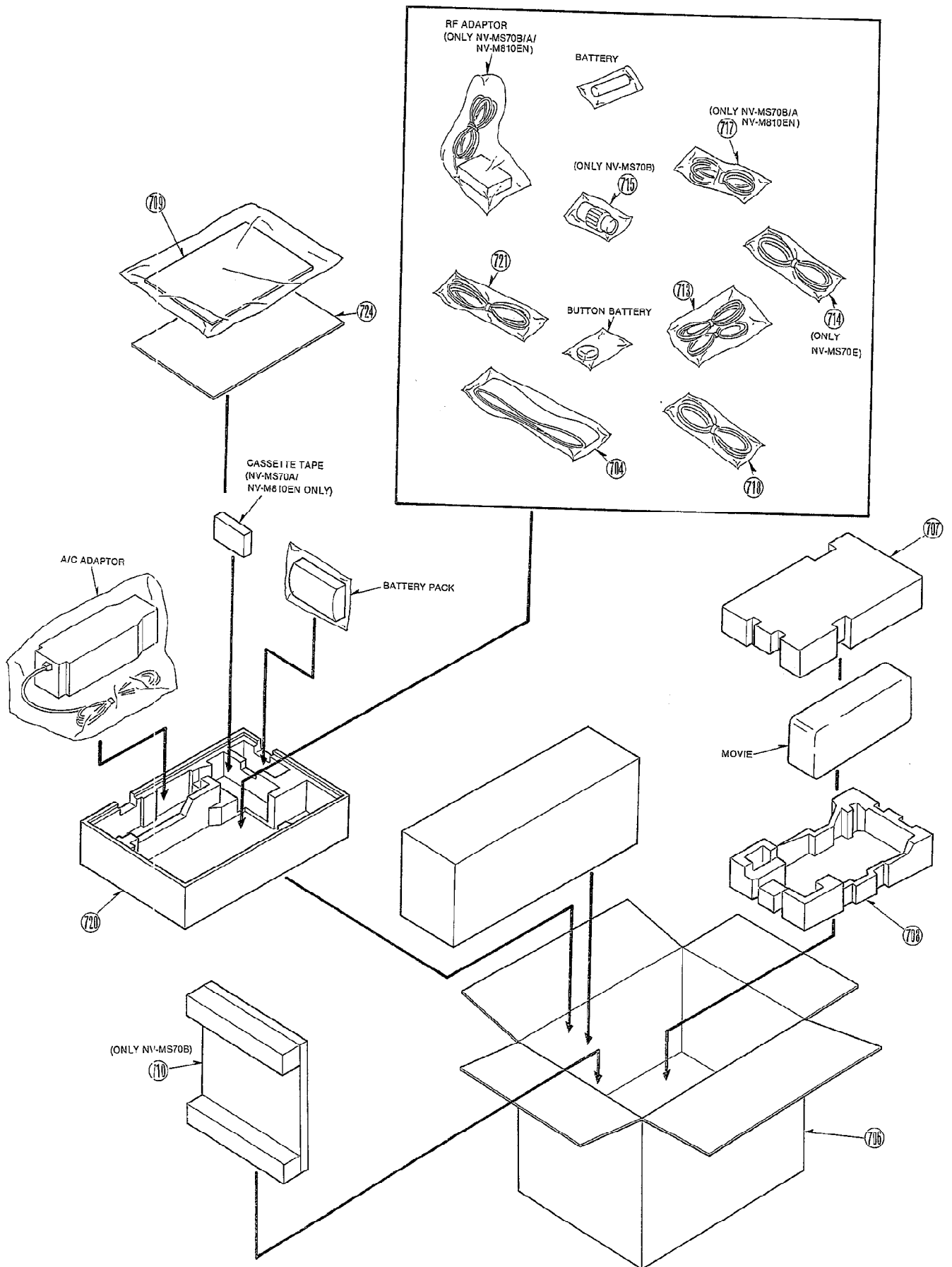
⑥ FRAME & CASING PARTS SECTION (2)



7 E.V.F. SECTION

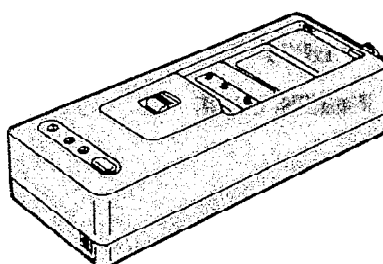


⑧ PACKING PARTS & ACCESSORIES SECTION



AC Adaptor

VW-AS1E/B/A



SPECIFICATIONS

ITEM	SPECIFICATION
POWER	Source: AC 100~240 V (50/60 Hz)
	Consumption: Approx. 35 VA (100 V)/48 VA (240 V)
	Output: DC 6 V, 1.8 A for VHS Movie DC 6 V, 1.3 A for battery charge
DIMENSIONS	70(W) × 50(H) × 178(D) mm
WEIGHT	Approx. 450 g

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

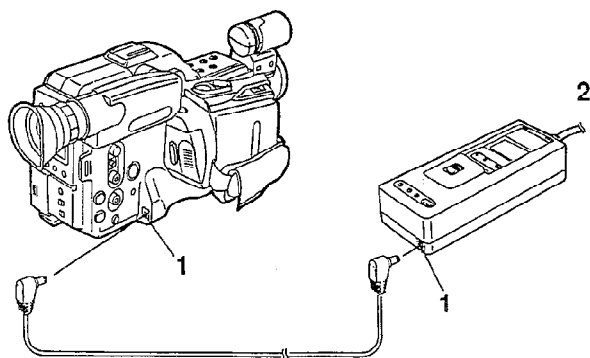
CAUTION: FOR USE WITH VHS VIDEO MOVIE, MODEL NV-MS70, NV-M810.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

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2. DISASSEMBLY PROCEDURES	1
3. AC ADAPTOR BLOCK DIAGRAM	3
4. AC ADAPTOR SCHEMATIC DIAGRAM	5
5. MAIN C.B.A., BATTERY CHARGE CONTROL C.B.A., PRIMARY CONTROL C.B.A. & SW C.B.A.	7
6. EXPLODED VIEWS	9
❶ CASING & CHASSIS PARTS SECTION	9
MECHANICAL REPLACEMENT PARTS LIST	
ELECTRICAL REPLACEMENT PARTS LIST	

1. CONTROLS AND COMPONENTS



1 Connect the Power Supply Cable from the DC Output Socket on the AC Adaptor to the DC Input Socket on the Movie Camera.

2 Connect to the Mains.

Note:

When a Battery Pack is attached to the AC Adaptor, the Movie Camera cannot be supplied with power.

2. DISASSEMBLY PROCEDURES

1. DISASSEMBLY FLOW CHART

This flow chart indicates the disassembly steps of the cabinet parts and the P.C. Boards in order to gain access to item(s) to be serviced.

When re-assembling, perform the step(s) in the reverse order.

Note:

When removing the Top Case Unit, work with care so as not to break the locking portions of the Top Case Unit.

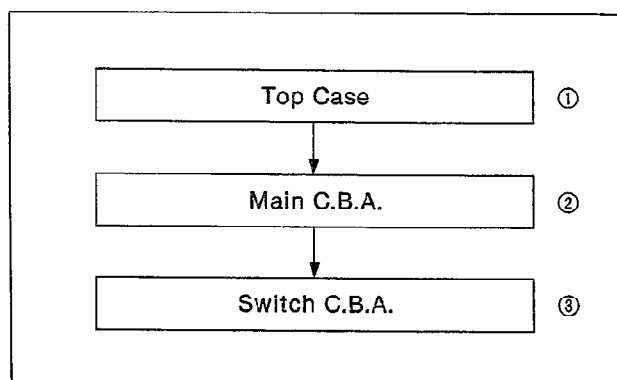


Fig. A1

2. DISASSEMBLY METHOD

Step /Loc No.	Part	REMOVAL		
		Fig. No.	Remove *UNLOCK/RELEASE/ UNPLUG/UNCLAMP	Note
①	Top Case	A2 A4	3 (S-1) 2 (L-1)	BOTTOM SIDE
②	Main C.B.A.	A3	5 (S0-1)	...
③	Switch C.B.A.	A4	2 (S-2)	...

List of Abbreviations:

3 (S-1) =3 Screws (S-1)

2 (L-1) =2 Locking Tabs (L-1)

5 (S0-1)=5 SOLDERED PORTIONS (S0-1)

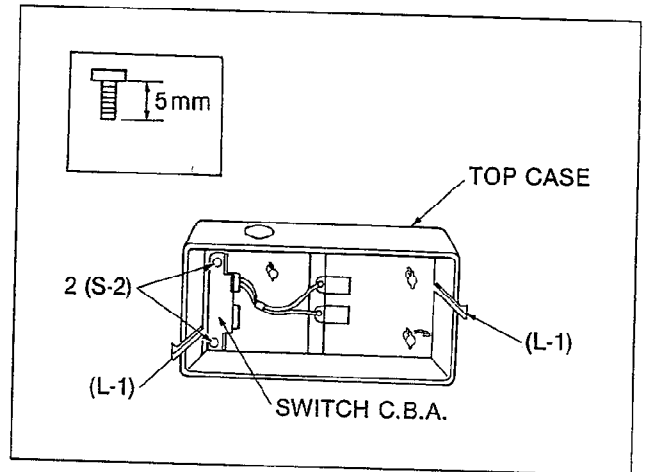


Fig. A4

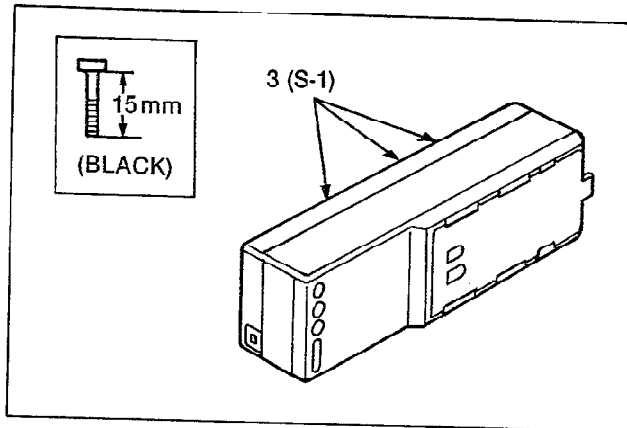


Fig. A2

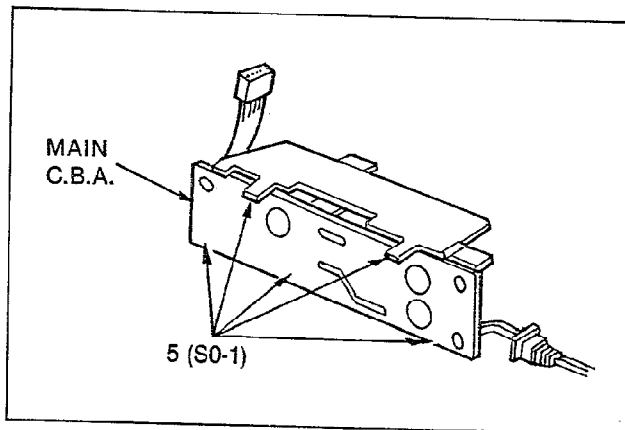
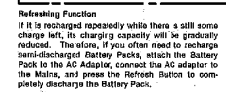
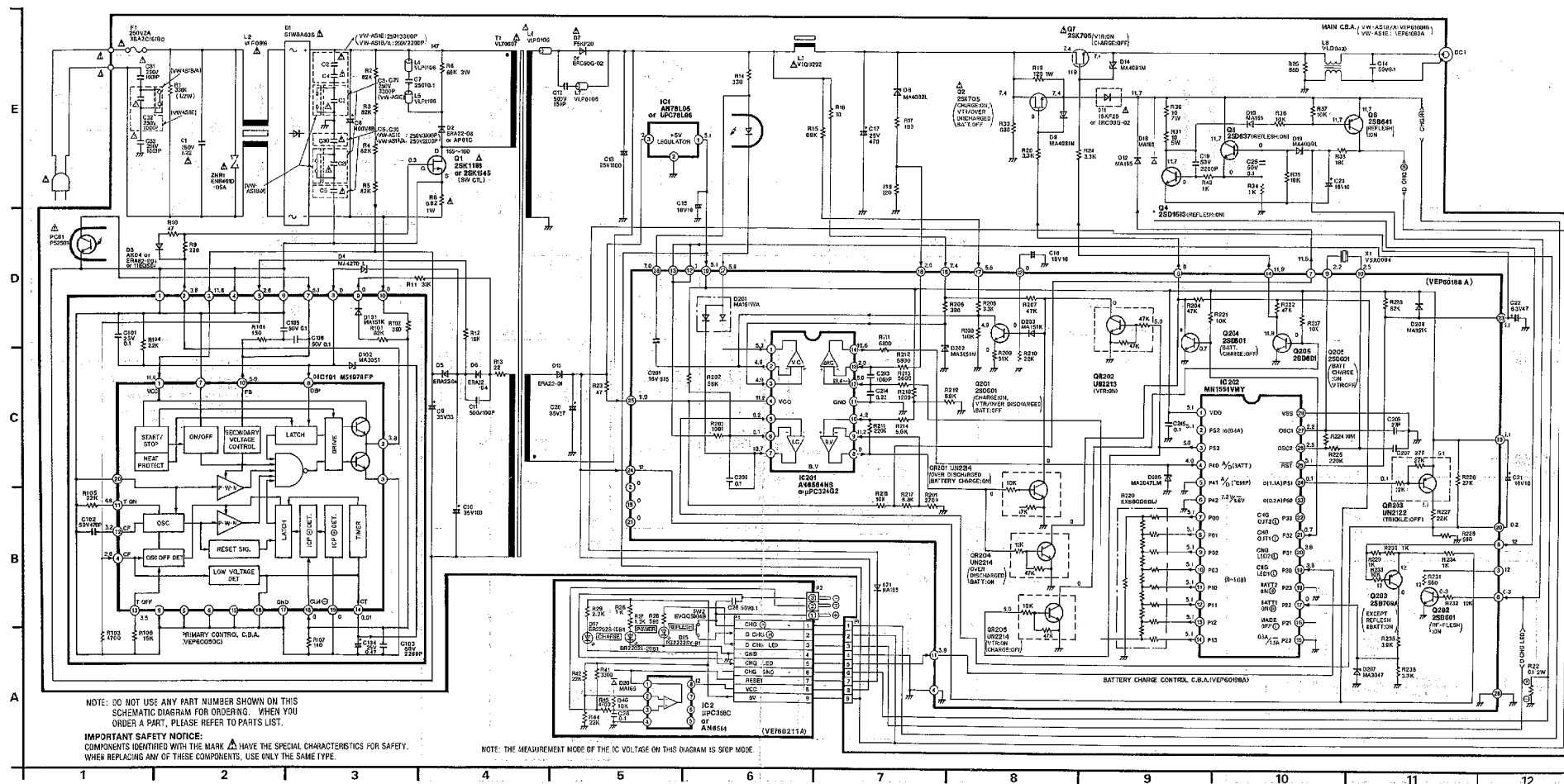


Fig. A3



4 AC ADAPTOR SCHEMATIC DIAGRAM



5 MAIN C B A (VEP61080A: VW-AS1E) (VEP61080B: VW-AS1B/A), BATTERY CHARGE
CONTROL C B A (VEP60188A), PRIMARY CONTROL C B A (VEP60050C) & SW C.B.A. (VEP60211A)

E

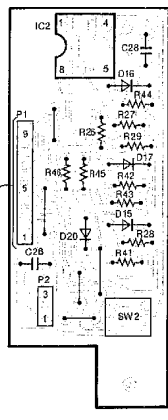
D

C

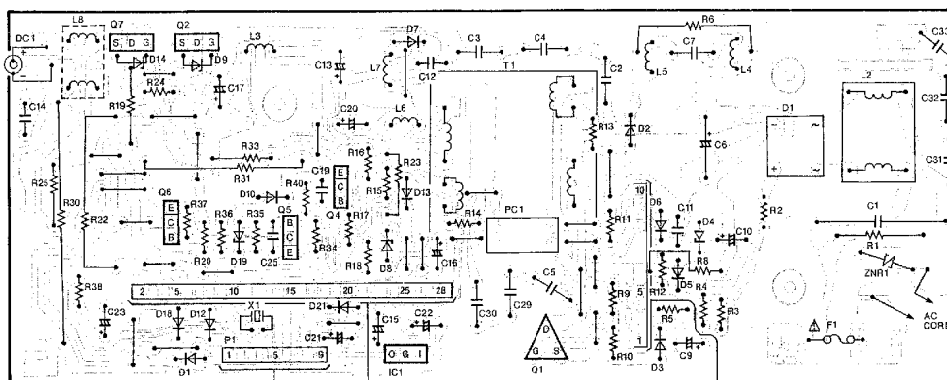
B

A

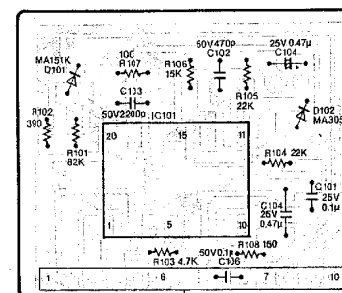
SW C.B.A. (VEP60211A)



MAIN C.B.A. (VEP61080A: VW-AS1E) (VEP61080B: VW-AS1B/A)



PRIMARY CONTROL C.B.A. (VEP60050C)



① CASING & CHASSIS PARTS SECTION



PARTS LIST

MODEL NO.: NV-MS70E/B/A, NV-M810EN, VW-AS1E/B/A

1. NV-MS70E/B/A, NV-M810EN Mechanical Replacement Parts List

Note:1.* Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark (!) have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
*****	NV-MS70E/B/A			
	NV-M810EN			
1(1)	VEG0847	CYLINDER U.	1	
2(1)	VEH0498	UPPER CYLINDER U.	1	
3(1)	VEW0390	CAPSTAN MOTOR U.	1	
4(1)	VDB1046	LOWER BEARING	1	
5(1)	VEK5213	STATOR U.	1	
7(1)	VJF0886	FPC HOLDER	1	
8(1)	VXP1225	ROTOR	1	
9(1)	VMD1524	THRUST CAP	1	
10(1)	VMD1735	DUST SEAL	1	
11(1)	VDP1300	PULLEY	1	
12(1)	VDV0212	CAPSTAN BELT	1	
14(1)	VDB1047	UPPER BEARING	1	
15(1)	VDB1081	HOUSING	1	
17(1)	VMD1580	PULLEY CAP	1	
18(1)	VSH0044	REC SAFETY SWITCH	2	
19(1)	VMB2094	LOCK LEVER (A) SPRING	1	
20(1)	VML2370	LOCK LEVER (A)	1	
21(1)	VXA3933	STAND (L) (1) U.	1	
22(1)	PN163	TAPE END DETECTOR	1	
24(1)	VDG0641	DUMPER GEAR	1	
25(1)	VXA3934	STAND R U	1	
30(1)	VMB2097	HOLDER SPRING (R)	1	
34(1)	VMB2095	SAFETY LEVER SPRING	1	
35(1)	VMB2096	HOLDER SPRING (L)	1	
41(1)	VXS0095	EARTH BRUSH	1	
42(1)	VMP2828	VTR MOUNT ANGLE	1	
43(1)	VXA3935	CASSETTE HOLDER U.	1	
44(1)	VVK1042	WASHER	1	
45(1)	VHD0389	SCREW	3	
46(1)	VHD0593	SCREW	2	
101(2)	VDG0642	DRIVE GEAR (A)	1	
102(2)	VDG0643	DRIVE GEAR (C)	1	
103(2)	VDG0644	DRIVE GEAR (D)	1	
104(2)	VMB2090	T4 POST SPRING	1	
105(2)	VMB2098	TAPE OPENER SPRING	1	
106(2)	VMB2099	T (1) TURNER SPRING	1	
107(2)	VMB2101	A/C BASE SPRING	1	
108(2)	VMB2103	T5 ARM SPRING	1	
109(2)	VMD1516	TAPE OPENER	1	
110(2)	VMD1517	T1 RETURNER	1	
111(2)	VVK1749	T4 FLANGE	1	
112(2)	VVK1805	T4 POST	1	
113(2)	VVK1306	A/C COLLAR	1	
114(2)	VMD1500	S RACK GUIDE	1	
115(2)	VXA3907	S RACK	1	
115(2)	VXA3909	S SHAFT HOLDER (2) U.	1	
117(2)	VXP1197	S2 ROLLER POST U.	1	
118(2)	VWC0566	T1 SHAFT HOLDER PLATE	1	
119(2)	VMD1501	T RACK GUIDE	1	
120(2)	VMS4254	T1 SHAFT HOLDER PIN	1	
121(2)	VXA3915	T RACK U.	1	
122(2)	VXA3917	T1 SHAFT HOLDER (1) U.	1	
123(2)	VXP1162	T ROLLER POST U.	1	
124(2)	VXA3920	T2 SHAFT HOLDER (2) U.	1	
125(2)	VXP1162A	ROLLER POST U.	1	
126(2)	PLP462	T RAIL U	1	
127(2)	VMD1503	T RAIL (L)	1	
128(2)	VXA3925	T RAIL (R) U.	1	
129(2)	VEK4701	A/C HEAD U.	1	
130(2)	VMB8113	A/C BASE	1	
131(2)	VMB2036	A/C TILT SPRING	1	
132(2)	VXA3931	PULLEY PLATE U.	1	
133(2)	VMD1671	T2V STOPPER	1	
135(2)	VWC0586	SPRING	1	
136(2)	VXA4248	ST-V STOPPER U	1	
138(2)	VXJ0086	IMPEDANCE ROLLER U.	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
139(2)	VXL2061	PINCH ARM (1) U.	1	
140(2)	VMB2087	ARM SPRING	1	
141(2)	VMD1507	PINCH ARM RAIL	1	
142(2)	VML2359	ARM	1	
143(2)	VXL1969	T5 LINK U.	1	
144(2)	VMB2102	CORRECTOR SPRING	1	
145(2)	VML2362	CORRECTOR (A)	1	
146(2)	VXL1973	CORRECTOR (C) U.	1	
147(2)	VXL1976	T5 ARM (1) U.	1	
148(2)	VMB2100	T5 POST SPRING	1	
152(2)	VXP1157	T CLUTCH GEAR U.	1	
153(2)	VHD0561	SCREW	2	
154(2)	VVK1739	SPACER	1	
155(2)	VVK1777	WASHER	1	
156(2)	VVK1061	WASHER	1	
157(2)	VVK1776	WASHER	1	
158(2)	VHD0525	SCREW	1	
159(2)	VHD0526	SCREW	1	
160(2)	VHD0536	SCREW	1	
161(2)	VHN0142	NUT	2	
162(2)	VHD0592	SCREW	7	
163(2)	VVK1061	WASHER	1	
164(2)	VHN0047	NUT	1	
201(3)	VDG0645	LOADING GEAR (2)	1	
207(3)	VDG0646	LOADING GEAR (3)	1	
203(3)	VDG0647	LOADING GEAR (4)	1	
204(3)	VDG0648	LOADING GEAR (5)	1	
205(3)	VDG0649	LOADING GEAR (T1)	1	
206(3)	VDC0680	GEAR	1	
207(3)	VEM0359	LOADING MOTOR (2) U.	1	
208(3)	VMA8111	WORM HOLDER	1	
209(3)	VVK1744	WORM SHAFT HOLDER	1	
210(3)	VXP1175	WORM UNIT	1	
211(3)	VMD1515	BAND GUIDE	1	
212(3)	VMD1518	CASS. POSITIONING PIECE (S)	1	
213(3)	VMD1519	CASS. POSITIONING PIECE (T)	1	
214(3)	VMD1530	FE CAP	1	
215(3)	VXA4244	LOADING GEAR S1 UNIT	1	
219(3)	VMB2080	LOADING GEAR SPRING	1	
221(3)	VEK4700	FE HEAD	1	
222(3)	VMB2082	(S4) POST SPRING	1	
223(3)	VVK1740	(S4) LOWER FLANGE	1	
224(3)	VVK1859	(S4) SLEEVE	1	
225(3)	VXA3922	(S) RAIL (1) UNIT	1	
226(3)	VXA3924	(T) RAIL M UNIT	1	
228(3)	VMB2091	EJECT LEVER (A) SPRING	1	
229(3)	VMB2093	LOCK LEVER (B) SPRING	1	
230(3)	VXA3928	LOCK BASE UNIT	1	
233(3)	VXG0021	CAM GEAR (1) U.	1	
235(3)	VXG0023	LOADING GEAR T2 UNIT	1	
236(3)	VMB2081	(T) LOADING GEAR SPRING	1	
237(3)	VXL1960	SECTOR GEAR (1) UNIT	1	
238(3)	VMB2084	PINCH HOLDING SPRING	1	
239(3)	VMB2085	PINCH PRESSURE SPRING	1	
240(3)	VXL1954	CORRECTOR DRIVE ARM UNIT	1	
241(3)	VXL1970	CENTRE GEAR (1) UNIT	1	
242(3)	VXL1971	TENSION ARM UNIT	1	
243(3)	VXK0189	(S) REEL TABLE	1	
244(3)	VMB2086	TENSION SPRING	1	
245(3)	VXZ0278	TENSION REGULATOR UNIT	1	
248(3)	VVK1061	WASHER	12	
249(3)	VHN0142	NUT	1	
250(3)	VMB2083	(T) RAIL SPRING	1	
252(3)	VHN0150	A/C NUT	1	
253(3)	VVK1840	WASHER	1	
301(4)	ESU19161	OPERATION PANEL	1	
305(4)	VVK3386	DIGI. MEMO. PANEL UNIT	1	
306(4)	VXWCC65	LENS (1) UNIT	1	
307(4)	VDM0112	CAM FRAME	1	
308(4)	VDM0114	MASTER FLANGE	1	
310(4)	VEN0348	ZOOM MOTOR (1)	1	
311(4)	VEN0349	FOCUS MOTOR (1)	1	
313(4)	VWJ0420	LENS FLEXIBLE CABLE	1	
314(4)	VXL1983	IRIS (1) UNIT	1	
315(4)	VXP1171	2ND MOVING FRAME (1) UNIT	1	

2. NV-MS70E/B/A, NV-M810EN Electrical Replacement Parts List

Note: 1. * Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark (<I>) have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified, All resistors are in OHMS, K=1,000 OHMS, All capacitors are in MICRO-GRADS(MF) PPMF.
4. The P.C. Board units marked with "M" show below the main assembled parts.
5. Printed circuit board assembly with show below the main assembled parts after discontinuation of the product.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		-----CAMERA SECTION-----		
	VEP22093A	SENSOR C.B.A.	1 (NLA)	
	VEP23110A	PROCESS C.B.A.	1 (NLA)	
	VEP27054A	AUTO FOCUS C.B.A.	1 (NLA)	
	VEP21098A	DIGITAL MEMORY C.B.A.	1 (NLA)	
	VEP21101A	DIGITAL MEMORY BACKUP C.B.A.	1 (NLA)	
		-----EVF SECTION-----		
	VEP38031A	EVF C.B.A.	1 (NLA)	
		-----VIR SECTION-----		
	VEP06716A	MAIN C.B.A.	1 (NLA)	
	VEP03797A	LUMINANCE/CHROMINANCE C.B.A.	1 (NLA)	
	VEP06717A	VIR OPERATION C.B.A.	1 (NLA)	
	VEP01450A	POWER C.B.A.	1 (NLA)	
	VEP02369A	MECHANISM CONNECTION C.B.A.	1 (NLA)	
	VEK5247	DC JACK C.B.A.	1 (NLA)	
		INCLUDING THE NOP SENSOR C.B.A.(VEK5263)		
	VEK5263	NOP SENSOR C.B.A.	1 (NLA)	
		INCLUDED IN DC JACK C.B.A. (VEK5247)		
	VEP22093A	SENSOR C.B.A.	(NLA)	
		CONNECTOR		
B201	WJP2846D024	CONNECTOR (MALE)	1	
		CAPACITORS		
C201	ECST1AX106Z	T. CAPACITOR 10V 10U	1	
C202-04	ECUM1H150JCV	C. CAPACITOR CH 50V 15P	3	
C208	ECUM1H150JCV	C. CAPACITOR CH 50V 15P	1	
C209	ECUM1H103KBV	C. CAPACITOR CH 50V 0.01U	1	
C210	ECUM1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C211	ECST1AX106Z	T. CAPACITOR 10V 10U	1	
		DIODES		
D201	MA110	DIODE	1	
D204	MA110	DIODE	1	
D208,09	MA110	DIODE	2	
D210	MA133	DIODE	1	
D212	MA8160-H	DIODE	1	
D213,14	MA110	DIODE	2	
D215	MA728	DIODE	1	
		FILTERS		
FL201	EIK4EW004T	FILTER	1	
		ICS		
IC201	WV5153	IC	1	
IC202	UPD16501GS	IC	1	
IC203	AN2012S	IC	1	
		COILS		
L201	ELJFA150K	COIL 15H	1	
L203-05	ELJFC150KF	COIL H	3	
L207,08	ELJFC150KF	COIL H	2	
L210-14	VLQ0291	COIL	5	
		TRANSISTORS		
Q202,03	2SD2216	TRANSISTOR	2	
Q204	2SC4526	TRANSISTOR	1	
Q207	2SA1510	TRANSISTOR	1	
Q208	2SC4176	TRANSISTOR	1	
Q209	2SA1510	TRANSISTOR	1	
Q210	2SC4176	TRANSISTOR	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
Q212,13	2SD2215	TRANSISTOR	2	
Q214,15	2SC4625	TRANSISTOR	2	
		RESISTORS		
R202	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R203	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0.00	1	
R204	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R205	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R206	ERJ3GEYJ581	M.RESISTOR CH 1/16W 580	1	
R207	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R208	ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1	
R209	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R210	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R211	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R212	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R215	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R216	ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R217	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R218	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R219	ERJ3GEYJ220	M.RESISTOR CH 1/16W 22	1	
R220	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R221	ERJ3GEYJ550	M.RESISTOR CH 1/16W 55	1	
R222	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R223, 24	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R237,38	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	2	
R239	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R241	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R242	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R243,44	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	2	
R245,46	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R247	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R248,49	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	2	
R251	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R252	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R254,55	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R260	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R261	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R263	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R270	ERJ8GCYJ330	M.RESISTOR CH 1/8W 33	1	
R275	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0.00	1	
R290	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R291	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0.00	1	
R292	ERJ3GEYJ560	M.RESISTOR CH 1/16W 56	1	
R293,94	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	2	
		RESISTOR		
VR201	VM7J3X30B25	V.RESISTOR 200K	1	
		OSCILLATOR		
X290	VSX0320	CRYSTAL OSCILLATOR	1	
	VEP23110A	PROCESS C.B.A.	(NLA)	
		CONNECTORS		
B301	VJS2846C016	CONNECTOR (FEMALE)	1	
B302	VJS2846C014	CONNECTOR (FEMALE)	1	
B303	VJS2846C024	CONNECTOR (FEMALE)	1	
B304,05	VJP2852E016	CONNECTOR (MALE)	2	
B306	VJP2846D016	CONNECTOR	1	
		CAPACITORS		

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C301	ECEVOJA101	E.CAPACITOR 6.3V 100U	1	
C305-07	ECUM1C2252FM	C.CAPACITOR CH 16V 2.2U	3	
C309-12	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	4	
C313	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C315	ECUM1C4732FV	C.CAPACITOR CH 16V 0.047U	1	
C316	ECUM1E4732FN	C.CAPACITOR CH 25V 0.047U	1	
C317	ECUM1C4732FV	C.CAPACITOR CH 16V 0.047U	1	
C318	ECEV1VAN2R2R	.CAPACITOR V	1	
C319	ECUM1C4732FV	C.CAPACITOR CH 16V 0.047U	1	
C320	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C321	ECUM1C4732FV	C.CAPACITOR CH 16V 0.047U	1	
C322	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C323	ECUM1C4732FV	C.CAPACITOR CH 16V 0.047U	1	
C324	ECSTOGC336Z	T.CAPACITOR 4V 33U	1	
C325	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
C326	ECUM1C4732FV	C.CAPACITOR CH 16V 0.047U	1	
C327	ECEVOJA170	E.CAPACITOR 6.3V 47U	1	
C328-30	ECUM1C4732FV	C.CAPACITOR CH 16V 0.047U	3	
C331	ECSTOGY105Z	T.CAPACITOR 4V 10U	1	
C332	ECEVOJA220	E.CAPACITOR 6.3V 22U	1	
C333	ECUM1C2252FM	C.CAPACITOR CH 16V 2.2U	1	
C335-38	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	4	
C341,42	ECUM1H270JCV	C.CAPACITOR CH 50V 27P	2	
C343	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C344	ECEVOJA330	E.CAPACITOR 6.3V 33U	1	
C345	ECEV1CAS100	E.CAPACITOR 16V 10U	1	
C346,47	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	2	
C351	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C352	ECEV1AAN100	E.CAPACITOR 10V 10U	1	
C353	ECUM1H101JCV	C.CAPACITOR CH 50V 100P	1	
C355,56	ECUM1H101JCV	C.CAPACITOR CH 50V 100P	2	
C357	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
C358,59	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	2	
C360	ECUM1E4732FN	C.CAPACITOR CH 25V 0.047U	1	
C361	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
C363	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
C364-67	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	4	
C368	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
C374	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C376	ECUM1H680JCV	C.CAPACITOR CH 50V 68P	1	
C377	ECUM1H220JCV	C.CAPACITOR CH 50V 22P	1	
C379	ECEV1HA2R2	E.CAPACITOR 50V 2.2U	1	
C380	ECUM1H331KBV	C.CAPACITOR CH 50V 330P	1	
C381-83	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	3	
C384	ECUM1E1042FN	C.CAPACITOR CH 25V 0.1U	1	
C385	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C386	ECUM1C4732FV	C.CAPACITOR CH 16V 0.047U	1	
C387	ECSTOGX226Z	T.CAPACITOR 4V 22U	1	
C388	ECST1AX106Z	T.CAPACITOR 10V 10U	1	
C389	ECUM1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C391	ECUM1C4732FV	C.CAPACITOR CH 16V 0.047U	1	
C393,94	ECUM1H102KBV	C.CAPACITOR CH 50V 1000P	2	
C395	ECEV1CAS100	E.CAPACITOR 16V 10U	1	
C396	ECUM1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C397	ECUM1H050DCV	C.CAPACITOR CH 50V 5P	1	
C398	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
C399	ECUM1H180JCV	C.CAPACITOR CH 50V 18P	1	
C400	ECEVOJA101	E.CAPACITOR 6.3V 100U	1	
C401	ECUM1H101JCV	C.CAPACITOR CH 50V 100P	1	
C402,03	ECUM1H102KBV	C.CAPACITOR CH 50V 1000P	2	
C404	ECST1CC106Z	T.CAPACITOR 16V 10U	1	
C405,06	ECST1CY105Z	T.CAPACITOR 16V 1U	2	
C407	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C408	ECEV1VAN2R2R	.CAPACITOR V	1	
C409	ECUM1H221KBV	C.CAPACITOR CH 50V 220P	1	
C410	ECUM1H101JCV	C.CAPACITOR CH 50V 100P	1	
		DIODES		
D301	MA110	DIODE	1	
D302	MA728	DIODE	1	
D303	MA8047-M	DIODE	1	
D304	MA110	DIODE	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R447	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R570	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R448	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1		R571	ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R449	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1		R572	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R450	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1		R573	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R451	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1		R574	ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R452	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1		R575	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R457	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1		R580	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R458	ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1		R581	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R459	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1				V.RESISTORS		
R460	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1		VR301	EVM7JSX30B15	V.RESISTOR 100K	1	
R461	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1		VR302	EVM7JSX30B53	V.RESISTOR 5K	1	
R462	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1						
R463	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1						
R465	ERJ3CEXOR00	M.RESISTOR CH 1/16W 0.00	1						
R466	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1						
R468	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1				OSCILLATOR		
R469-71	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	3		X301	EPCW419450A	CRYSTAL OSCILLATOR	1	
R472,73	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	2						
R480-82	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	3						
R485	ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1						
R486	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1				MISCELLANEOUS		
R488	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1			VME1603	HIC BARRIER	1	
R489	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1						
R490	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1						
R492,93	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	2						
R494	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1						
R495	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1						
R496	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1			VEP27054A	AUTO FOCUS C.B.A.	(NLA)	
R497	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1						
R498	ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1						
R499	ERJ3GEYJ023	M.RESISTOR CH 1/16W 92K	1						
R500	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1				CONNECTORS		
R501	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1		B701	VJP2846D014	CONNECTOR (MALE)	1	
R502	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1		B702	VJP2846D016	CONNECTOR	1	
R503	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1						
R506	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1						
R507	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1						
R508	ERJ3GEYJ603	M.RESISTOR CH 1/16W 68K	1				CAPACITORS		
R509	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1		C701	ECUM1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
R510	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1		C702	ECUM1C105ZFV	C.CAPACITOR CH 16V 1U	1	
R511,12	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	2		C703	ECUM1H102KBV	C.CAPACITOR CH 50V 1000P	1	
R513	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1		C704	ECST1CX335Z	T.CAPACITOR 16V 3.3U	1	
R514	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1		C705,06	ECST1AX106Z	T.CAPACITOR 10V 10U	2	
R515	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1		C707	ECUM1C2242FN	C.CAPACITOR CH 15V 0.22U	1	
R516-20	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	5		C708	ECST1AX106Z	T.CAPACITOR 10V 10U	1	
R521	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1		C709	ECUM1C1042FV	C.CAPACITOR CH 15V 0.1U	1	
R523	ERJ3GEYJ470	M.RESISTOR CH 1/16W 47	1		C710,11	ECUM1C2242FN	C.CAPACITOR CH 16V 0.22U	2	
R524	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1		C712	ECUM1C4732FV	C.CAPACITOR CH 16V 0.047U	1	
R526	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1		C713	ECEVOJA101	E.CAPACITOR 6.3V 100U	1	
R527	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1		C716	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
R528	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1		C717	ECEVOJA101	E.CAPACITOR 6.3V 100U	1	
R529	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1		C719	ECUM1C683ZFN	C.CAPACITOR CH 16V 0.068U	1	
R530-35	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	6		C720-23	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	4	
R536-39	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	3		C724	ECUM1H151JCV	C.CAPACITOR CH 50V 150P	1	
R539	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1		C725	ECEVOJA101	E.CAPACITOR 6.3V 100U	1	
R540	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		C726	ECRJA020E12	TRIMER	1	
R542,43	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2		C727	ECUM1H150JCV	C.CAPACITOR CH 50V 15P	1	
R544	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1		C744,45	ECUM1H103KBV	C.CAPACITOR CH 50V 0.01U	2	
R545	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1		C746	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
R546	ERJ3GEYJ684	M.RESISTOR CH 1/16W 680K	1		C747	ECEVOJA470	E.CAPACITOR 6.3V 47U	1	
R547	ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1		C748	ECUM1H332KBV	C.CAPACITOR CH 50V 3300P	1	
R548	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		C749	ECST1CV105Z	T.CAPACITOR 10V 1U	1	
R549	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1		C750	ECST0GV106Z	T.CAPACITOR 4V 10U	1	
R551	ERJ3GEYJ474	M.RESISTOR CH 1/16W 470K	1		C756,57	ECUM1H392KBV	C.CAPACITOR CH 50V 3900P	2	
R552	ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1		C760	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
R555	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		C763	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
R560	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1		C764	ECUM1H102KBV	C.CAPACITOR CH 50V 1000P	1	
R561	ERJ3GEYJ582	M.RESISTOR CH 1/16W 6.8K	1		C765	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
R562	ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1		C766	ECUM1H102KBV	C.CAPACITOR CH 50V 1000P	1	
R563	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1		C770	ECUM1H560JCV	C.CAPACITOR CH 50V 56P	1	
R564,65	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2		C780	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
R566	ERJ3GEYJ184	M.RESISTOR CH 1/16W 180K	1		C781	ECST1CV105Z	T.CAPACITOR 16V 1U	1	
R567	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1		C790	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
R568	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1						
R569	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1						

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		DIODE			R741	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
D701-03	PA110	DIODE	3		R742	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
					R743	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
					R750	ERJ3GEYJ303	M.RESISTOR CH 1/16W 30K	1	
		CONNECTORS			R751	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
FP701	VJS2848D020	CONNECTOR (FEMALE)	1		R760-63	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	4	
FP702	VJS2907D007	CONNECTOR (FEMALE)	1		R768.69	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	2	
					R770	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
					R771	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
					R772-74	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	3	
					R775-79	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	5	
		ICS			R780	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
IC701	IM358DB	IC	1		R781	ERJ3GEYJ470	M.RESISTOR CH 1/16W 47	1	
IC702	AN2585FAP	IC	1		R782.83	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
IC703	MN67803VCW	IC	1		R790	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
IC704	TB6503AF	IC	1		R791.92	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	2	
IC705	MN1551VUSA	IC	1		R793	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
IC706	AN6545SP	IC	1		R794	ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
IC707	AN6563SP	IC	1		R795	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
IC709	LM324DB	IC	1		R796	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
IC710	UPD7554AG503	IC	1		R797.98	ERJ3GEYJ8R2	M.RESISTOR CH 1/16W 8.2	2	
IC711	MB88341PFV	IC	1						
IC712	LM358DB	IC	1				RESISTORS		
IC713	S8054ALBLM	IC	1		VR701	EVUT0A03B15	V.RESISTOR W	1	
IC714	RH5R50AA	IC	1		VR702	EVLMGVA12B54	V.RESISTOR W	1	
		COILS							
L702	VLQ0441K221	COIL H	1						
L703	VLQ0401K270	COIL 270H	1				OSCILLATORS		
L704	VLQ0319F150	COIL 150H	1		X701	EFW8004E0A	CRYSTAL OSCILLATOR	1	
L705.06	VLQ0319K101	COIL 1000H	2		X702	EFW4194E0A	CRYSTAL OSCILLATOR	1	
L707	ELJFC150KF	COIL H	1						
L708	ELJFA150K	COIL 15H	1						
		TRANSISTORS							
Q701	2SD2216	TRANSISTOR	1			VEP21095A	DIGITAL MEMORY C.B.A.		
Q703	UN9211	TRANSISTOR-RESISTOR	1						
Q704	UN9213	TRANSISTOR-RESISTOR	1						
Q705.06	UN9110	TRANSISTOR-RESISTOR	2				CONNECTOR		
Q707	UN9211	TRANSISTOR-RESISTOR	1		B101	VJS2846C016	CONNECTOR (FEMALE)	1	
Q708	UN9110	TRANSISTOR-RESISTOR	1						
Q709	2SD2216	TRANSISTOR	1						
Q710	UN9211	TRANSISTOR-RESISTOR	1						
Q711	2SB1219	TRANSISTOR	1				CAPACITORS		
					C101	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
		RESISTORS			C102	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
R701	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1		C103	ECUM1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
R702	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1		C104	ECRJA020E12	TRIMER	1	
R703	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1		C105	ECUM1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
R704	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1		C106	ECUM1H101JCV	C.CAPACITOR CH 50V 100P	1	
R705	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1		C107	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
R706	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1		C108	ECUM1H331JCV	C.CAPACITOR CH 50V 330P	1	
R707	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1		C109	ECST1AX1052	T.CAPACITOR 10V 10U	1	
R708	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1		C110.11	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	2	
R709	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1		C112	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
R710	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		C113	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
R711	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1		C114	ECUM1H391KBV	C.CAPACITOR CH 50V 390P	1	
R712	ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1		C115	ECUM1H331KBV	C.CAPACITOR CH 50V 330P	1	
R713	ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1		C116	ECUM1H121JCV	C.CAPACITOR CH 50V 120P	1	
R714	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1		C117	ECUM1H181KBV	C.CAPACITOR CH 50V 180P	1	
R715	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1		C118	ECUM1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
R716	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1		C119	ECST1AX1062	T.CAPACITOR 10V 10U	1	
R717	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1						
R720	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1				DIODES		
R721	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1		D101.02	PA110	DIODE	2	
R729.30	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2		D104.05	PA110	DIODE	2	
R738.39	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2		D107-09	PA110	DIODE	3	
R740	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1		D110	PA334B	DIODE	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		ICS			IC151	MN74HC86S	IC	1	
IC101	UPD75402A508	IC	1		IC152	TC7S04F	IC	1	
IC102	UPD65044CO68	IC	1						
IC103	IC3664NML12	IC	1				RESISTORS		
IC104	S8052ANBNE	IC	1		R114	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	#
IC105	S8054ALBIM	IC	1		R123	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
IC106	IC3664NML12	IC	1		R151	ERJ6GEYJ473	M.RESISTOR CH 1/16W 47K	1	
IC107	TC7S00F	IC	1		R152	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
IC108	TC7S32F	IC	1						
		COIL							
L102	ELJFC150KF	COIL	H 1			VEP28031A	EVF C.B.A.		(NLA)
		TRANSISTORS							
Q101	UN9211	TRANSISTOR-RESISTOR	1				CAPACITORS		
Q102	UN9210	TRANSISTOR-RESISTOR	1		C801	ECUM1E104JBM	C.CAPACITOR CH 25V 0.1U	1	
Q103	UN9213	TRANSISTOR-RESISTOR	1		C802	ECEA1CKE101	E.CAPACITOR 16V 100U	1	
					C803	ECUM1H121JCN	C.CAPACITOR CH 50V 120P	1	
					C804	ECUM1C224ZFN	C.CAPACITOR CH 16V 0.22U	1	
					C805	ECEA1CKE101	E.CAPACITOR 16V 100U	1	
					C806	ECUM1E223KBN	C.CAPACITOR CH 25V 0.023U	1	
					C807	ECUM1C105K3	C.CAPACITOR CH 16V 1U	1	
					C808	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
		RESISTORS			C809	ECEA1CKE101	E.CAPACITOR 16V 100U	1	
R101	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		C810	ECUM2A272JUM	C.CAPACITOR CH 10V 2700P	1	
R102,03	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	2		C811	ECEA1CKE101	E.CAPACITOR 16V 100U	1	
R104,05	FR13GEYJ102	M.RESISTOR CH 1/16W 1K	2		C812	ECUM1H101JCN	C.CAPACITOR CH 50V 100P	1	
R107,08	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	2		C813	VCK0088K151	C.CAPACITOR	1	
R109	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1		C814	ECEV1HA010	E.CAPACITOR 50V 1U	1	
R110	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1		C815	VCK0058K331	C.CAPACITOR 330P	1	
R111	ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1		C816	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
R112	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1						
R113	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1						
R114	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1				DIODES		
R115	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1		D801	MA141K	DIODE	1	
R116	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1		D802	SFPL-52	DIODE	1	
R117	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1		D803	AP01C	DIODE	1	
R118	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1						
R119	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1				IC		
R120-22	ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	3		IC801	AN2514S	IC	1	
R123	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1						
R126	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1						
R127	ERJ3GEYCR00	M.RESISTOR CH 1/16W 0.00	1						
R128	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1						
		SWITCHES							
SW101,02	EVQQHP01W	SWITCH	2						
SW104,05	EVQQHP01W	SWITCH	2				COILS		
SW109	EVQQHP01W	SWITCH	1		L801	VLQ0441K390	COIL	H 1	
					L802	ELH51212	COIL	H 1	
					L803	VLQ0319K470	COIL	47UH 1	
		OSCILLATORS							
X101	EF04M194E0A	CRYSTAL OSCILLATOR	1						
X102	V5X0421	CRYSTAL OSCILLATOR	1				CONNECTORS		
					P801	VJP3007E005	CONNECTOR	1	
					P802	VJP3007E004	CONNECTOR	1	
					P803	VJP1229T	CONNECTOR (MALE)	1	
					P804	VJP3007E003	CONNECTOR	1	
	VEP21101A	DIGITAL MEMORY BACKUP C.B.A		(NLA)					
							TRANSISTORS		
					Q801	2SB1218	TRANSISTOR	1	
					Q802	2SD958A-S	TRANSISTOR	1	
					Q803	2SA1532	TRANSISTOR	1	
		CAPACITORS							
C100	ECUM1H331JCV	C.CAPACITOR CH 50V 330P	1				RESISTORS		
C151,52	ECUM1C104KRN	C.CAPACITOR CH 16V 0.1U	2		R801	ERJ6ENF4422	RESISTOR W	1	
					R802	ERJ6GEYK3R9	M.RESISTOR CH 1/10W 3.9	1	
					R805	ERJ6GEYJ102	M.RESISTOR CH 1/10W 1K	1	
		ICS							
IC109	TC7S08F	IC	1						
IC110	TC7S32F	IC	1						

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R808	ERJ6GEYJ272	M.RESISTOR CH 1/10W 2.7K	1		C4008	ECUM1C3352FP	C.CAPACITOR CH 16V 3.3U	1	
R809	ERJ6GEYJ474	M.RESISTOR CH 1/10W 470K	1		C4009	ECEVICAS100	E.CAPACITOR 16V 10U	1	
R810	ERJ6GEYJ104	M.RESISTOR CH 1/10W 100K	1		C4010	ECST1CY2252	T.CAPACITOR 16V 2.2U	1	
R811,12	ERJ6GEYJ102	M.RESISTOR CH 1/10W 1K	2		C4011	ECUM1H151JCV	C.CAPACITOR CH 50V 150P	1	
R813	ERJ6GEYJ391	M.RESISTOR CH 1/10W 390	1		C4012	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
R814	ERJ6GEYJ222	M.RESISTOR CH 1/10W 2.2K	1		C4013	ECUM1H221JV	C.CAPACITOR CH 50V 220P	1	
R815	ERJ6GEYJ272	M.RESISTOR CH 1/10W 2.7K	1		C4014	ECEVOJA470	E.CAPACITOR 6.3V 47U	1	
R816	ERJ6GEYJ472	M.RESISTOR CH 1/10W 4.7K	1		C4015	ECEVOJA220	E.CAPACITOR 6.3V 22U	1	
R817	ERJ6GEYJ242	M.RESISTOR CH 1/10W 2.4K	1		C4016	ECUM1H682KRV	C.CAPACITOR CH 50V 6800P	1	
R818	ERJ6GEYJ153	M.RESISTOR CH 1/10W 15K	1		C4018	ECUM1H822KRV	C.CAPACITOR CH 50V 8200P	1	
R819-21	ERJ6GEYK335	M.RESISTOR CH1/10W 3.3K	3		C4019,20	ECUM1H562KRV	C.CAPACITOR CH 50V 5600P	2	
R823	ERJ6GEYK3R3	M.RESISTOR CH 1/10W 3.3	1		C4021	ECEVOJAN220P	.CAPACITOR V	1	
					C4022	ECUM1H391KRV	C.CAPACITOR CH 50V 390P	1	
					C4023	ECUM2A822JCM	C.CAPACITOR CH 10V 8200P	1	
		TRANSFORMERS			C4024	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
		TRANSFORMER			C4025	ECUM1E223KRV	C.CAPACITOR CH 25V 0.023U	1	
T801	ETFO9LAB	TRANSFORMER	1		C4026	ECEVOJA470	E.CAPACITOR 6.3V 47U	1	
					C4027	ECQV1H683JA	P.CAPACITOR 50V 0.068U	1	
					C4028	ECUM1H472KRV	C.CAPACITOR CH 50V 4700P	1	
					C4029	ECUM1E223KRV	C.CAPACITOR CH 25V 0.023U	1	
		RESISTORS			C4030	ECEVICAS100	E.CAPACITOR 16V 10U	1	
VR801	EVM7JSK30BE2	V.RESISTOR W	1		C4031,32	ECST1AY4752	T.CAPACITOR 10V 4.7U	2	
VR802	EVM7JSK30B54	V.RESISTOR 50K	1		C4033,34	ECUM1H102KRV	C.CAPACITOR CH 50V 1000P	2	
VR803	EVM1PNAOCBV6	V.RESISTOR W	1		C4035,36	ECEVOGA470	E.CAPACITOR 4V 47U	2	
VR804	EVM1PNAOCBE6	V.RESISTOR W	1		C4037,38	ECST1CY2252	T.CAPACITOR 16V 2.2U	2	
					C4039,40	ECUM1H390JCV	C.CAPACITOR CH 50V 39P	2	
					C4041,42	ECST06X2262	T.CAPACITOR 4V 22U	2	
					C4043	ECUM1H270JCV	C.CAPACITOR CH 50V 27P	1	
					C4044	ECUM1H220JCV	C.CAPACITOR CH 50V 22P	1	
	VEP06716A	MAIN C.B.A.		(NLA)	C4045	ECST1AY4752	T.CAPACITOR 10V 4.7U	1	
					C4046	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
					C4047,48	ECUM1H102KRV	C.CAPACITOR CH 50V 1000P	2	
					C4049	ECST1AX1062	T.CAPACITOR 10V 10U	1	
		CAPACITORS			C4050	ECUM1C3352FP	C.CAPACITOR CH 16V 3.3U	1	
C2001	ECUM1H472KRV	C.CAPACITOR CH 50V 4700P	1		C4051	ECST1CY2252	T.CAPACITOR 16V 2.2U	1	
C2002	ECUM1C1052FM	C.CAPACITOR CH 16V 1U	1		C4052	ECEVOJA220	E.CAPACITOR 6.3V 22U	1	
C2003	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1		C4053	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C2004	ECST1AX1062	T.CAPACITOR 10V 10U	1		C4055	ECEVOJA220	E.CAPACITOR 6.3V 22U	1	
C2005	ECEVHASO10	E.CAPACITOR 50V 1U	1		C4056	ECEVOGAS220	E.CAPACITOR 4V 22U	1	
C2006,07	ECEVICAS100	E.CAPACITOR 16V 10U	2		C4057	ECEVHASO10	E.CAPACITOR 50V 1U	1	
C2008	ECUM1E2232FV	C.CAPACITOR CH 25V 0.022U	1		C4059	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C2009	ECUM1C1052FM	C.CAPACITOR CH 16V 1U	1		C4060	ECUM1H822KRV	C.CAPACITOR CH 50V 8200P	1	
C2010	ECUM1H561KRV	C.CAPACITOR CH 50V 560P	1		C4501-04	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	4	
C2011	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	1		C4505,06	ECEVOGAS220	E.CAPACITOR 4V 22U	2	
C2012,13	ECUM1C105KBP	C.CAPACITOR CH 16V 1U	2		C4507,08	ECUM1H222KRV	C.CAPACITOR CH 50V 2200P	2	
C2014,15	ECEVOGA470	E.CAPACITOR 4V 47U	2		C4509,10	ECEVICAS100	E.CAPACITOR 16V 10U	2	
C2016	ECUM1H472KRV	C.CAPACITOR CH 50V 4700P	1		C4511,12	ECUM1E103KRV	C.CAPACITOR CH 25V 0.01U	2	
C2017	ECUM1C105KBP	C.CAPACITOR CH 16V 1U	1		C4513,14	ECST1AY4752	T.CAPACITOR 10V 4.7U	2	
C2018	ECUM1C1052FM	C.CAPACITOR CH 16V 1U	1		C4515,16	ECEVOJAN470	E.CAPACITOR 6.3V 47U	2	
C2019	ECUM1H121JCV	C.CAPACITOR CH 50V 120P	1		C4517,18	ECFV1AAN100	E.CAPACITOR 10V 10U	2	
C2020	ECUM1E104KRV	C.CAPACITOR CH 25V 0.1U	1		C4519,20	ECUM1H103KRV	C.CAPACITOR CH 50V 0.01U	2	
C2021	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	1		C4521,22	ECST1AY4752	T.CAPACITOR 10V 4.7U	2	
C2022	ECUM1H272KRV	C.CAPACITOR CH 50V 2700P	1		C4523,24	ECUM1H122KRV	C.CAPACITOR CH 50V 1200P	2	
C2023	ECUM1E104KRV	C.CAPACITOR CH 25V 0.1U	1		C4527,28	ECEVOGA470	E.CAPACITOR 4V 47U	2	
C2024	ECQB1E273JP	P.CAPACITOR 25V 0.027U	1		C4529,30	ECUM1H102KRV	C.CAPACITOR CH 50V 1000P	2	
C2025	ECUM1C105KBP	C.CAPACITOR CH 16V 1U	1		C4531-33	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	3	
C2027,28	ECUM1H270JCV	C.CAPACITOR CH 50V 27P	2		C4534	ECUM1H271JV	C.CAPACITOR CH 50V 270P	1	
C2029	ECUM1C4732FV	C.CAPACITOR CH 16V 0.047U	1		C4536	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C2030	ECUM1H472KRV	C.CAPACITOR CH 50V 4700P	1		C4537	ECEVOJA470	E.CAPACITOR 6.3V 47U	1	
C2031	ECUM1E104KRV	C.CAPACITOR CH 25V 0.1U	1		C4538,39	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	2	
C2032	ECUM1C274KRV	C.CAPACITOR CH 16V 0.27U	1		C4540	ECEVHAN010R	E.CAPACITOR 50V 1U	1	
C2036	ECUM1C1052FM	C.CAPACITOR CH 16V 1U	1		C4541	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C2038	ECUM1H122KRV	C.CAPACITOR CH 50V 1200P	1		C4542	ECEVICAS100	E.CAPACITOR 16V 10U	1	
C2039	ECUM1C4742FM	C.CAPACITOR CH 16V 0.47U	1		C4543	ECEVOGA470	E.CAPACITOR 4V 47U	1	
C2040	ECST1AX1062	T.CAPACITOR 10V 10U	1		C4544	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C2041	ECEV1CA470P	E.CAPACITOR 16V 47U	1		C4545	ECEVOJA470	E.CAPACITOR 6.3V 47U	1	
C2042	ECEV1EAS4R7	E.CAPACITOR 25V 4.7U	1		C4546,47	ECEVOGA470	E.CAPACITOR 4V 47U	2	
C2043,44	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	2		C4548	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C2045	ECUM1C4732FV	C.CAPACITOR CH 16V 0.047U	1		C4549	ECUM1C3352FP	C.CAPACITOR CH 16V 3.3U	1	
C2046-48	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	3		C4550	ECEVHAN010R	E.CAPACITOR 50V 1U	1	
C4001	ECUM1C3352FP	C.CAPACITOR CH 16V 3.3U	1		C4551	ECST1AY4752	T.CAPACITOR 10V 4.7U	1	
C4002	ECUM1H272KRV	C.CAPACITOR CH 50V 2700P	1		C4552	ECEVOJA470	E.CAPACITOR 6.3V 47U	1	
C4003	ECUM1H122KRV	C.CAPACITOR CH 50V 1200P	1		C4554,55	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	2	
C4004	ECUM1C153KRV	C.CAPACITOR CH 16V 0.015U	1		C4556	ECST1AX1062	T.CAPACITOR 10V 10U	1	
C4005	ECEVICAS100	E.CAPACITOR 16V 10U	1		C4557	ECEVOJA470	E.CAPACITOR 6.3V 47U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C4558	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C4560	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C4563	ECUM1H103KGV	C.CAPACITOR CH 50V 0.01U	1	
C4564	ECUM1H390JCV	C.CAPACITOR CH 50V 39P	1	
C4565,66	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	2	
C4567	ECST1A4752	T.CAPACITOR 10V 4.7U	1	
C4571,72	ECUM1E183KMN	C.CAPACITOR CH 25V 0.018U	2	
C5001	ECUM1C105KBP	C.CAPACITOR CH 16V 1U	1	
C5002	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C5003	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
C5004,05	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	2	
C5006	ECUM1H121JCV	C.CAPACITOR CH 50V 120P	1	
C5007	ECUM1H151JV	C.CAPACITOR CH 50V 150P	1	
C5008	ECUM1H390JCV	C.CAPACITOR CH 50V 39P	1	
C5009	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C5010	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
C5011	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C5012	ECUM1E1042FN	C.CAPACITOR CH 25V 0.1U	1	
C5013	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C5014	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
C5015	ECUM1E1042FN	C.CAPACITOR CH 25V 0.1U	1	
C5016,17	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	2	
C5018	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C5019	ECUM1E1042FN	C.CAPACITOR CH 25V 0.1U	1	
C5020	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C5021,22	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	2	
C5023-27	ECUM1E1042FN	C.CAPACITOR CH 25V 0.1U	5	
C5020	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
C5030,31	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	2	
C5033,34	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	2	
C5036,37	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	2	
C5039	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
C5040	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C5041	ECST1A1052	T.CAPACITOR 10V 10U	1	
C5042	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C5043	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C5044	ECUM1H472KGV	C.CAPACITOR CH 50V 4700P	1	
C5045	ECUM1H822KGV	C.CAPACITOR CH 50V 8200P	1	
C5046,47	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	2	
C5048	ECEVOJA470	E.CAPACITOR 6.3V 47U	1	
C5049,50	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	2	
C5051,52	ECST1A1052	T.CAPACITOR 10V 10U	2	
C5053,54	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	2	
C5055	ECST1A1052	T.CAPACITOR 10V 10U	1	
C5056	ECUM1H820JCV	C.CAPACITOR CH 50V 82P	1	
C5057	ECUM1H560JCV	C.CAPACITOR CH 50V 56P	1	
C5058	ECUM1H1000CV	C.CAPACITOR CH 50V 10P	1	
C5060	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C5061	ECST1A1052	T.CAPACITOR 10V 10U	1	
C5063	ECUM1H470JCV	C.CAPACITOR CH 50V 47P	1	
C5064	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C5065	ECUM1H471JCV	C.CAPACITOR CH 50V 470P	1	
C5066	ECUM1H220JCV	C.CAPACITOR CH 50V 22P	1	
C5068	ECST1A1052	T.CAPACITOR 10V 10U	1	
C5069,70	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	2	
C5071	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
C5072-75	ECUM1H121JCV	C.CAPACITOR CH 50V 120P	4	
C5076-79	ECUM1H120JCV	C.CAPACITOR CH 50V 12P	4	
C5080-83	ECUM1H103KGV	C.CAPACITOR CH 50V 0.01U	4	
C5085,86	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	2	
C5087	ECUM1C1052FN	C.CAPACITOR CH 16V 1U	1	
C5088	ECUM1H560JCV	C.CAPACITOR CH 50V 56P	1	
C5089	ECUM1H1000CV	C.CAPACITOR CH 50V 10P	1	
C5090,91	ECUM1H220JCV	C.CAPACITOR CH 50V 22P	2	
C5092	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C5093,94	ECUM1H220JCV	C.CAPACITOR CH 50V 22P	2	
C5501	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C5502	ECUM1C153KBP	C.CAPACITOR CH 16V 0.015U	1	
C5503	ECUM1H102KGV	C.CAPACITOR CH 50V 1000P	1	
C5504	ECUM1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C5001	ECEVOJA470	E.CAPACITOR 5.3V 47U	1	
C5002	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C5003	ECUM1H330JCV	C.CAPACITOR CH 50V 33P	1	
C5004	ECRJA030E12	V.CAPACITOR	1	
C5006	ECEV1CA220	E.CAPACITOR 16V 22U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C6007	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C6009	ECEV1HA3R3	E.CAPACITOR 50V 3.3U	1	
C6011	ECEV1CA220	E.CAPACITOR 16V 22U	1	
C6012	ECUM1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C6016	ECEV1CA470P	E.CAPACITOR 16V 47U	1	
C6017,18	ECUM1H221JV	C.CAPACITOR CH 50V 220P	2	
C6019	ECUM1H330JCV	C.CAPACITOR CH 50V 33P	1	
		DIODES		
D2001,02	MA133	DIODE	2	
D2004	MA132WK	DIODE	1	
D4001	MA3036-L	DIODE	1	
D4002	MA132WK	DIODE	1	
D4501	MA132WA	DIODE	1	
D4502	MA133	DIODE	1	
D4503-05	MA132WA	DIODE	3	
D4509	MA132WA	DIODE	1	
D4511,12	MA132WK	DIODE	2	
D4515	MA132WK	DIODE	1	
D5001-08	MA132WK	DIODE	8	
D5010	MA132WK	DIODE	1	
D6001-04	MA132WK	DIODE	4	
D6005	MA141K	DIODE	1	
D6006-11	MA132WK	DIODE	6	
D6013-15	MA132WK	DIODE	3	
D6018,19	MA132WK	DIODE	2	
D6022	MA132WA	DIODE	1	
D6023	MA132WK	DIODE	1	
D6025	MA3100	DIODE	1	
D6026	MA132WK	DIODE	1	
D6028	MA132WA	DIODE	1	
D6029	MA132WK	DIODE	1	
D6030	MA141K	DIODE	1	
		FILTERS		
FL4501	VLFO890	FILTER	1	
FL4502	VLFO889	FILTER	1	
FL5001	VLFO593	FILTER	1	
		ICS		
IC2001	MN67512VCE	IC	1	
IC2002,03	LM358DB	IC	2	
IC2004	MN12821	IC	1	
IC2005	LM393DB	IC	1	
IC4001	BA7757BK	IC	1	
IC4002	BA3308F	IC	1	
IC4003	S81250HCRD	IC	1	
IC4501	AN3935NHP	IC	1	
IC4502	RC3415M	IC	1	
IC5001	AN3348FBP	IC	1	
IC5002	VEFH10C	IC	1	
IC5003	AN3396S	IC	1	
IC6001	UPD75112G576	IC	1	
IC6002	UPD6145G619A	IC	1	
IC6003	UPD4066BG	IC	1	
IC6004	LM393DB	IC	1	
IC6005	MN12821R	IC	1 (R)	
IC6006	S81250HCRD	IC	1	
		COILS		
L2001,02	VLQ0319K100	COIL 10UH	2	
L4001,02	VLQ0423J153	COIL H	2	
L4003	VLQ0319K101	COIL 100UH	1	
L4004	VLQ0319F221	COIL 220UH	1	
L4501-03	VLQ0319K101	COIL 100UH	3	
L4504	VLQ0163K560	COIL 56UH	1	
L4505,06	VLQ0438K471	COIL H	2	
L5001-04	VLQ0319K101	COIL 100UH	4	
L5005	VLQ0319K100	COIL 10UH	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
L5006	VLQ0163K120	COIL 12UH	1	
L5007	VLQ0319F150	COIL 15UH	1	
L5008	VLQ0163J1150	COIL 150K	1	
L5009	VLQ0163J330	COIL 330K	1	
L5010	VLQ0319K01	COIL 100UH	1	
L5021	VLQ0163J3R9	COIL 3.9UH	1	
L5022	VLQ0163J121	COIL 120UH	1	
L5023	VLQ0163J150	COIL 15UH	1	
L6001	VLQ0319K330	COIL 39UH	1	
L6002	VLQ0319K101	COIL 100UH	1	
		CONNECTORS		
P1002	WJP2846D016	CONNECTOR	1	
P1004	WJP2846D015	CONNECTOR	1	
P2001	WJS2848D025	CONNECTOR	1	
P4001	WJP2263	CONNECTOR	1	
P4002	WJS2848D009	CONNECTOR	1	
P5001	WJS2851C030	CONNECTOR	1	
P5002	WJS2851C022	CONNECTOR	1	
P5003	WJS2907D023	CONNECTOR	1	
P6001	WJP2250	CONNECTOR (PALE)	1	
P6002	WJP2839D020	CONNECTOR	1	
P6003	WJP2847D005	CONNECTOR	1	
P6004	WJS2848D018	CONNECTOR	1	
P6005, 06	WJP2847D004	CONNECTOR	2	
P6007	WJS2851C010	CONNECTOR	1	
		TRANSISTORS		
Q4001	2SD602	TRANSISTOR	1 (R)	
Q4002	2SB1219	TRANSISTOR	1	
Q4004	2SD1819	TRANSISTOR	1 (R)	
Q4005, 06	2SC2405	TRANSISTOR	2	
Q4007	2SB1220	TRANSISTOR	1	
Q4008, 09	2SD1819A-R	TRANSISTOR	2	
Q4501-04	2SD1328	TRANSISTOR CHIP	4	
Q4507, 08	2SD2216-R	TRANSISTOR	2	
Q4509, 10	2SB1462	TRANSISTOR	2	
Q5001, 02	2SA812	TRANSISTOR	2	
Q5003	2SC4627	TRANSISTOR	1	
Q5004	2SD2216	TRANSISTOR	1	
Q5005	2SC4627	TRANSISTOR	1	
Q5006	2SD2216	TRANSISTOR	1	
Q5007-10	2SB970X	TRANSISTOR	4	
Q5015-18	2SD1938	TRANSISTOR	4	
Q5019	2SC4627	TRANSISTOR	1	
Q5020	2SB970X	TRANSISTOR	1	
Q6001	2SD2216	TRANSISTOR	1	
Q6002, 03	2SB970X	TRANSISTOR	2	
Q6004	2SD2216	TRANSISTOR	1	
		COMBINATION PARTS		
QR01	UN5212	TRANSISTOR-RESISTOR	1	
QR2C01, 02	KN4113	TRANSISTOR-TRANSISTOR	2	
QR2C03, 04	KN4213	TRANSISTOR-TRANSISTOR	2	
QR2C05	1MD2	TRANSISTOR-RESISTOR	1	
QR2C06	UN9210	TRANSISTOR-RESISTOR	1	
QR4C02	UN9212	TRANSISTOR-RESISTOR	1	
QR4C03	KN1213	TRANSISTOR-TRANSISTOR	1	
QR4C05	UN511F	TRANSISTOR-RESISTOR	1	
QR4C06	UN5213	TRANSISTOR	1	
QR4C07	UN9213	TRANSISTOR-RESISTOR	1	
QR4C08	UN9211	TRANSISTOR-RESISTOR	1	
QR4501	UN9110	TRANSISTOR-RESISTOR	1	
QR4502	KN1212	TRANSISTOR-TRANSISTOR	1	
QR4503	KN1213	TRANSISTOR-TRANSISTOR	1	
QR4504	UN9213	TRANSISTOR-RESISTOR	1	
QR5C02	UN9213	TRANSISTOR-RESISTOR	1	
QR5006	UN5213	TRANSISTOR	1	
QR5C07	KN1212	TRANSISTOR-TRANSISTOR	1	
QR5C08	UN9211	TRANSISTOR-RESISTOR	1	
		RESISTORS		
R2001	FRJ3GEYX223	M.RESISTOR CH 1/16W 22K	1	
R2002	ERJ3GEYX222	M.RESISTOR CH 1/16W 2.2K	1	
R2003, 04	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	2	
R2005	ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1	
R2006	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R2007, 08	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R2009	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R2010	ERJ3GEYJ684	M.RESISTOR CH 1/16W 680K	1	
R2011	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R2012	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R2013	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R2014	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R2015	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R2016, 17	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	2	
R2018	ERJ3GEYJ272	M.RESISTOR CH 1/15W 2.7K	1	
R2019	ERJ3GEYJ563	M.RESISTOR CH 1/15W 56K	1	
R2020	ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R2021	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R2022	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R2023	ERJ3GEYJ274	M.RESISTOR CH 1/16W 270K	1	
R2024, 25	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	2	
R2026	ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R2027	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R2028	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R2029	ERJ3GEYJ274	M.RESISTOR CH 1/16W 270K	1	
R2030	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R2032	ERJ3GEYORCO	M.RESISTOR CH 1/16W 0.00	1	
R2033, 34	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	2	
R2035	ERJ8GCYJ471	M.RESISTOR CH 1/8W 470	1	
R2036	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R2037	ERJ3GEYORCO	M.RESISTOR CH 1/16W 0.00	1	
R2039	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R2041	FRJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R2043, 44	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	2	
R2047	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R2048	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R2049	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R2050	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R2051	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R2052	FRJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
R2053	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R2055	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R2056	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R2057	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R2058	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R2059	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R2060	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R2063	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R2064	ERJ3GEYJ823	M.RESISTOR CH 1/15W 82K	1	
R2065, 66	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R2067	ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
R2070-72	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	3	
R4C01	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R4C02	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R4C03	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R4C04	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R4005	ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
R4006	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R4007	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4008	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R4009	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R4010	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R4011	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R4012	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R4013,14	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	2	
R4015	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R4017	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R4019	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R4020	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R4021	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R4022	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R4023,24	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R4025	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R4026	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R4027	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	1	
R4028	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R4029	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4030,31	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	2	
R4032,33	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R4034	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4035,36	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	2	
R4037,38	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	2	
R4039,40	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	2	
R4041,42	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	2	
R4043,44	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	2	
R4045,46	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R4047,48	ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	2	
R4049	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4050	ERJ6GMKJ101	M.RESISTOR CH 1/10W 100	1	
R4051,52	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	2	
R4053,54	ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	2	
R4055	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R4056	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R4057	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R4060,61	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R4064	ERJ3GEYJ823	M.RESISTOR CH 1/16W 82K	1	
R4065,66	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	2	
R4067	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4068	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R4069,70	ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	2	
R4073,74	ERJ3GEYJ470	M.RESISTOR CH 1/16W 47	2	
R4075	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R4076	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R4077	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R4078	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R4501,02	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	2	
R4503,04	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	2	
R4505	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R4506	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R4507	ERJ6GMKJ123	M.RESISTOR CH 1/10W 12K	1	
R4508	ERJ6GMKJ103	M.RESISTOR CH 1/10W 10K	1	
R4509,10	ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	2	
R4511,12	ERJ3GEYJ000	M.RESISTOR CH 1/16W 0.00	2	
R4513,14	ERJ3GEYJ242	M.RESISTOR CH 1/16W 2.4K	2	
R4515,16	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	2	
R4517,18	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R4519,20	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	2	
R4521,22	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	2	
R4523,24	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	2	
R4527,28	ERJ8CCYJ121	M.RESISTOR CH 1/8W 120	2	
R4529,30	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	2	
R4531,32	ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	2	
R4533	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4534	ERJ3GEYJ000	M.RESISTOR CH 1/16W 0.00	1	
R4535	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4536	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R4537	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R4538	ERJ3GEYJ000	M.RESISTOR CH 1/16W 0.00	1	
R4539	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R4540-42	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	3	
R4543	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R4544	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R4546	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R4547	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4548	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R4549	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R4550	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4552	ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1	
R4553-55	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	3	
R4553	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4564	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R4565	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4566	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R4567	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4568,69	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R4570	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R4571,72	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	2	
R4573,76	ERJ3GEYJ000	M.RESISTOR CH 1/16W 0.00	2	
R4577	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4578,79	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	2	
R5001	ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R5002	ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1	
R5003	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R5004	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R5005	ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1	
R5006	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R5007	ERJ3GEYJ271	M.RESISTOR CH 1/16W 270	1	
R5009	ERJ6GMKJ477	M.RESISTOR CH 1/10W 4.7	1	
R5009-12	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	4	
R5013,14	ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	2	
R5015,16	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	2	
R5017,18	ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	2	
R5019	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R5020-23	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	4	
R5024-27	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	4	
R5028-31	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	4	
R5032	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R5035	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R5036,37	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R5038	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R5040	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R5042	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R5043	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R5044	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R5045,46	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R5047	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R5048	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R5049	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R5051	ERJ3GEYJ223	M.RESISTOR CH 1/16W 2.2K	1	
R5052	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R5053-57	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	5	
R5058	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R5059	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R5060	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R5061	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R5063	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R5064	ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	1	
R5073	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R5074	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R5076	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R5077	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R5079	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R5080,81	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	2	
R5082,83	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	2	
R5084,85	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	2	
R5086	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R5087	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R5088,89	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	2	
R5090,91	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R5093	ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	
R5100	ERJ6GMKJ000	M.RESISTOR CH 1/10W 0	1	
R5501	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R6001-04	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	4	
R6005	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6006,07	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	2	
R6008	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C3135, 36	ECUM1H330JCV	C. CAPACITOR CH 50V 33P	2	
C3137	EC5V0JA220P	.CAPACITOR V	1	
C3138	ECUM1H330JCV	C. CAPACITOR CH 50V 33P	1	
C3145	ECST1AX106Z	T. CAPACITOR 10V 10U	1	
C3146	ECWV1E823JS9	.CAPACITOR V	1	
C3148	ECUM1H561JV	C. CAPACITOR CH 50V 560P	1	
C3149	ECUM1H620JCV	C. CAPACITOR CH 50V 62P	1	
C3151	ECUM1H101JCV	C. CAPACITOR CH 50V 100P	1	
C4201, 02	EC5V0JA220	E. CAPACITOR 6.3V 22U	2	
C4203	ECUM1C335ZFP	C. CAPACITOR CH 16V 3.3U	1	
C4204	ECUM1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C8003	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C8004	ECUM1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C8007	ECUM1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C8008	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C8009	EC5V0GA470	E. CAPACITOR 4V 47U	1	
C8010	ECUM1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C8013	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C8014	ECUM1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C8016, 17	EC5V1CA5100	E. CAPACITOR 16V 10U	2	
C8020	ECUM1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C8022	ECUM1C224ZFN	C. CAPACITOR CH 16V 0.22U	1	
C8023	ECST1AX106Z	T. CAPACITOR 10V 10U	1	
C8024	EC5V1CA5100	E. CAPACITOR 16V 10U	1	
C8025	ECUM1C123KBV	C. CAPACITOR CH 16V 0.012U	1	
C8026, 27	EC5V1HA2R2	E. CAPACITOR 50V 2.2U	2	
C8028	ECUM1C225ZFM	C. CAPACITOR CH 16V 2.2U	1	
C8029	ECUM1C105KBP	C. CAPACITOR CH 16V 1U	1	
C8031	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C8032	ECUM1C474ZFM	C. CAPACITOR CH 16V 0.47U	1	
C8033	EC5V1EA54R7	E. CAPACITOR 25V 4.7U	1	
C8035	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C8036	ECST1AX106Z	T. CAPACITOR 10V 10U	1	
C8037	ECUM1H330JCV	C. CAPACITOR CH 50V 33P	1	
C8038	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C8039	ECUM1C105ZFM	C. CAPACITOR CH 16V 1U	1	
C8040	ECUM1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C8041	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C8043	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C8044	ECST1AX106Z	T. CAPACITOR 10V 10U	1	
C8045	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C8046	ECST1AX106Z	T. CAPACITOR 10V 10U	1	
C8047, 48	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	2	
C8049	ECUM1H150JCV	C. CAPACITOR CH 50V 15P	1	
C8050-52	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	3	
C8054	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C8056, 57	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	2	
C8058	ECUM1H153ZFV	C. CAPACITOR CH 50V 0.015U	1	
C8059	ECUM1H150JCV	C. CAPACITOR CH 50V 15P	1	
C8065	ECUM1H472KBV	C. CAPACITOR CH 50V 4700P	1	
C8066	ECUM1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C8069	ECUM1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C8070, 71	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	2	
C8073	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C8074	ECUM1H471KBV	C. CAPACITOR CH 50V 470P	1	
C8075	ECUM1H040CCV	C. CAPACITOR CH 50V 4P	1	
C8095	ECUM1H221JV	C. CAPACITOR CH 50V 220P	1	
C8096	ECUM1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C8097	ECRKWO20E21X	.CAPACITOR V	1	
C8110	ECUM1H471JV	C. CAPACITOR CH 50V 470P	1	
C8124	EC5V0JA101	E. CAPACITOR 6.3V 100U	1	
C8126	ECST1AX475Z	T. CAPACITOR 10V 4.7U	1	
C8127	EC5V1AA470P	.CAPACITOR V	1	
C8128	EC5V0JA101	E. CAPACITOR 6.3V 100U	1	
C8129	EC5V1AA470P	.CAPACITOR V	1	
C8130	EC5V0JA101	E. CAPACITOR 6.3V 100U	1	
C8135	ECUM1C224ZFN	C. CAPACITOR CH 16V 0.22U	1	
C8140-43	ECUM1E473KBN	C. CAPACITOR CH 25V 0.047U	4	
C8144	ECUM1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C8145	ECUM1H102KBV	C. CAPACITOR CH 50V 1000P	1	
C8150	EC5V1CA5100	E. CAPACITOR 16V 10U	1	
		DIODES		

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
D01	MA110	DIODE	1	
D3001-03	MA132WK	DIODE	3	
D3010, 11	MA132WK	DIODE	2	
D8002	MA132WK	DIODE	1	
		DELAY		
DL8001	EFDAT124A13B	DELAY	1	
		FILTERS		
FL3001	ELB4E511	FILTER	1	
FL3002	ELB4C516	FILTER	1	
FL3003	VLFO802	FILTER	1	
FL3005	VLFO803	FILTER	1	
FL8001	VLFO887	FILTER	1	
		ICS		
IC3001	VEFH15B	IC	1	
IC3002	TL8909F	IC	1	
IC3003	AN3292NS	IC	1	
IC3004	AN35003B	IC	1	
IC3005	MN74HC02S	IC	1	
IC4201	TCAS66F	IC	1	
IC8001	AN2465FAP	IC	1	
IC8002	AN3497SB	IC	1	
IC8003	VEFH12A	IC	1	
		COILS		
L3001	VLQ0153J470	COIL 47UH	1	
L3002	VLQ0153J680	COIL 58UH	1	
L3003	VLQ0153J121	COIL 120UH	1	
L3004	VLQ0153J221	COIL 220UH	1	
L3005-07	VLQ0319K101	COIL 100UH	3	
L3009	VLQ0319K170	COIL 47UH	1	
L3010	VLQ0319K101	COIL 100UH	1	
L3011	VLQ0163K6R8	COIL H	1	
L3013	VLQ0319K170	COIL 47UH	1	
L3014	VLQ0163J120	COIL H	1	
L3040	VLQ0163J560	COIL 56UH	1	
L3042	VLQ0163J3R3	COIL 3.3UH	1	
L3043	VLQ0163J390	COIL 39UH	1	
L3044	VLQ0163J5R6	COIL 5.6UH	1	
L3045	VLQ0319F150	COIL 15UH	1	
L4201	VLQ0319K101	COIL 100UH	1	
L8002	VLQ0163K150	COIL 15UH	1	
L8003	VLQ0163J150	COIL 15UH	1	
L8004, 05	VLQ0319K470	COIL 47UH	2	
L8006	VLQ0319K101	COIL 100UH	1	
L8007, 08	VLQ0163K150	COIL 15UH	2	
L8009, 10	VLQ0319K101	COIL 100UH	2	
L8011	VLQ0133K102	COIL 1mH	1	
L8012	VLQ0133K681	COIL 680UH	1	
L8013, 14	VLQ0319K101	COIL 100UH	2	
L8015	VLQ0163J8R2	COIL 8.2UH	1	
L8016	VLQ0163J150	COIL 15UH	1	
L8017	VLQ0319K101	COIL 100UH	1	
		CONNECTORS		
P3001	VJP2851E030	CONNECTOR	1	
P3002	VJP2851E022	CONNECTOR	1	
P3003, 04	VJS2852C016	CONNECTOR	2	
P3005	VJP2847D004	CONNECTOR	1	
		TRANSISTORS		

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
Q3001	2SD2216	TRANSISTOR	1		R3044	ERJ3GEYJ680	M.RESISTOR CH 1/16W 68	1	
Q3002	2SB1462	TRANSISTOR	1		R3046	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
Q3007	2SC4627	TRANSISTOR	1		R3047	ERJ3GEYJ680	M.RESISTOR CH 1/16W 68	1	
Q3008	XN4401	TRANSISTOR-TRANSISTOR	1		R3048	ERJ3GEYJ560	M.RESISTOR CH 1/16W 56	1	
Q3009	2SD2216	TRANSISTOR	1		R3049	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
Q3010	2SC3938	TRANSISTOR	1		R3050	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
Q3011	2SB1462	TRANSISTOR	1		R3051	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
Q3012	2SD2216	TRANSISTOR	1		R3052	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
Q3013, 14	2SB1462	TRANSISTOR	2		R3053	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
Q8010	2SC4627	TRANSISTOR	1		R3054	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
Q8011	2SD2216	TRANSISTOR	1		R3055, 56	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
Q8013	2SB1462	TRANSISTOR	1		R3057	ERJ3GEYORCO	M.RESISTOR CH 1/16W 0.00	1	
Q8014	2SD2216	TRANSISTOR	1		R3066	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
Q8020	2SC4627	TRANSISTOR	1		R3072	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
Q8030	2SB1462	TRANSISTOR	1		R3075	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
Q8035, 36	XN4501	TRANSISTOR-TRANSISTOR	2		R3076	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
					R3080	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
					R3084	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
		TRANSISTORS			R3093	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
QR3001-03	UN9212	TRANSISTOR-RESISTOR	3		R3113	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
QR3005	UN9212	TRANSISTOR-RESISTOR	1		R3114	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
QR3007, 08	UN9212	TRANSISTOR-RESISTOR	2		R3130	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
QR3010	INM2	TRANSISTOR-RESISTOR	1		R3131	ERJ3GEYJ750	M.RESISTOR CH 1/16W 75	1	
QR3015	UN9212	TRANSISTOR-RESISTOR	1		R3132	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
QR3026	UN9212	TRANSISTOR-RESISTOR	1		R3133	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
QR3027	AW1213	TRANSISTOR-TRANSISTOR	1		R3134	ERJ3GEYJ224	M.RESISTOR CH 1/16W 22K	1	
QR3028	UN9212	TRANSISTOR-RESISTOR	1		R3135	ERJ3GEYORCO	M.RESISTOR CH 1/16W 0.00	1	
QR3029	UN9213	TRANSISTOR-RESISTOR	1		R3138	ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1	
QR3031	UN9217	TRANSISTOR-RESISTOR	1		R3139	ERJ3GEYORCO	M.RESISTOR CH 1/16W 0.00	1	
QR3032	UN9116	TRANSISTOR-RESISTOR	1		R3140, 41	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	2	
QR3033	XN1212	TRANSISTOR-TRANSISTOR	1		R3142	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
QR3040	XN1501	TRANSISTOR-TRANSISTOR	1		R3143, 44	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	2	
QR3045	UN9212	TRANSISTOR-RESISTOR	1		R3145	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
QR3065	XN1212	TRANSISTOR-TRANSISTOR	1		R3146	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
QR4201	UN9213	TRANSISTOR-RESISTOR	1		R3147	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
QR8003-05	UN9212	TRANSISTOR-RESISTOR	3		R3148	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
QR8008	UN9213	TRANSISTOR-RESISTOR	1		R3149	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
QR8010	UN9212	TRANSISTOR-RESISTOR	1		R3150	ERJ3GEYJ581	M.RESISTOR CH 1/16W 680	1	
QR8012	UN9212	TRANSISTOR-RESISTOR	1		R3151	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
QR8020	UN9212	TRANSISTOR-RESISTOR	1		R3152	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
					R3153	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
					R3154	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
					R3155	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
		RESISTORS			R3156	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R3001	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1		R3157	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3002	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1		R3158	ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	
R3003	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1		R3159	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R3004	ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1		R3160	ERJ3GEYORCO	M.RESISTOR CH 1/16W 0.00	1	
R3005	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1		R3170	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R3006	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1		R3171, 72	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R3007	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R3173	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R3013	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R4201, 02	ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	2	
R3015	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R4203, 04	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	2	
R3017	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1		R4205	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R3018, 19	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	2		R4206	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3020	ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1		R8C07	ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R3021	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1		R8C08	ERJ3GEYJ271	M.RESISTOR CH 1/16W 270	1	
R3022	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R8013	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3023	ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1		R8014	ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R3024	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1		R8015	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R3026	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1		R8017-20	ERJ3GEYORCO	M.RESISTOR CH 1/16W 0.00	4	
R3027	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1		R8021	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R3028	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1		R8022	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R3029	ERJ3GEYJ823	M.RESISTOR CH 1/16W 82K	1		R8026	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R3030	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R8033	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R3031	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1		R8045	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3032	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1		R8046	ERJ3GEYJ581	M.RESISTOR CH 1/16W 580	1	
R3033	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R8047	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3034	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1		R8048	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R3035	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1		R8049	ERJ3GEYJ271	M.RESISTOR CH 1/16W 270	1	
R3036, 37	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2		R8050	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R3038	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1		R8060	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R3039	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R8071	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3040	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1		R8072	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
					R8073	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		RESISTORS		
R1001	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R1002	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R1003	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R1004	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R1005	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R1006	VSP0059	FUSE	1	
R1007	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R1008	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R1009	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0.00	1	
R1011	ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R1012	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R1013	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R1014	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R1015	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0.00	1	
R1016	ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	
R1017	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R1018,19	ERJ8GCYJ471	M.RESISTOR CH 1/8W 470	2	
R1020	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R1021	ERJ6GWYJ273	M.RESISTOR CH 1/10W 27K	1	
R1022	ERJ6GWYJ682	M.RESISTOR CH 1/10W 6.8K	1	
R1023	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R1024	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R1025	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R1026	ERJ8GCYJ330	M.RESISTOR CH 1/8W 33	1	
R1027	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R1028	ERJ6GWYJ393	M.RESISTOR CH 1/10W 39K	1	
R1029	ERJ6GWYJ682	M.RESISTOR CH 1/10W 6.0K	1	
R1030	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R1031	ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1	
R1032	ERJ8GCYJ330	M.RESISTOR CH 1/8W 33	1	
R1033	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R1034	ERJ6GWYJ473	M.RESISTOR CH 1/10W 47K	1	
R1035	ERJ6GWYJ562	M.RESISTOR CH 1/10W 5.6K	1	
R1036	ERJ8GCYJ560	M.RESISTOR CH 1/8W 56	1	
R1037	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R1038	ERJ3GEYJ271	M.RESISTOR CH 1/16W 270	1	
R1039	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R1041	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0.00	1	
R1042	ERJ6GWYOR00	M.RESISTOR CH 1/10W 0	1	
R1045,46	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R1047	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R1048	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R1049	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R1050	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R1052	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R1053	ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R1054	ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	
R1055	ERJ8GCYJ391	M.RESISTOR CH 1/8W 390	1	
R1056	ERJ3GEYJ603	M.RESISTOR CH 1/16W 68K	1	
R1057,58	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R1059	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0.00	1	
R1061	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R1062	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R1063	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0.00	1	
R1064	VSP0015A08	IC PROTECTOR	1	
R1065	VSP0015A025	IC PROTECTOR	1	
R1070	ERJ6GWYJ124	M.RESISTOR CH 1/10W 120K	1	
		TRANSFORMERS		
T1001	VIP0306	TRANSFORMER	1	
T1002	VIP0307	TRANSFORMER	1	
		RESISTORS		
VR1001	EWMLGA00B53	V.RESISTOR 5K	1	
VR1003	EWMLGA00B53	V.RESISTOR 5K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		MISCELLANEOUS		
	VSC3044	SHIELD CASE (UPPER)	1	
	VEPO2369A	MECHANISM CONNECTION C.B.A.	(N/A)	
		CAPACITORS		
C2101	ECST1CD2262	T.CAPACITOR 16V 22U	1	
C2102	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C2103	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C2104	ECUM1H473ZFN	C.CAPACITOR CH 50V 0.047U	1	
C2105	ECUW1E223KFN	C.CAPACITOR CH 25V 0.022U	1	
C2106	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C2108	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C2109	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C2110	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C2111	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C2112,13	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	2	
C2114	ECST1CD2262	T.CAPACITOR 16V 22U	1	
C2115	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C2116	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C2117	ECUM1H473ZFN	C.CAPACITOR CH 50V 0.047U	1	
C2118	ECUW1E333KFN	C.CAPACITOR CH 25V 0.033U	1	
C2120	ECST1AX1062	T.CAPACITOR 10V 10U	1	
C2122-24	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	3	
C2125	ECUM1C104KFN	C.CAPACITOR CH 16V 0.1U	1	
C2126-28	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	3	
C2129	ECST1CD3362	T.CAPACITOR 16V 33U	1	
C6101	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C6102,03	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	2	
C6104,05	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	2	
C6106	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
		ICS		
IC2101	AN3890FBS	IC	1	
IC2102	UN218CU	IC	1	
IC2103	AN3890FBS	IC	1	
IC2104	TDN3702TP1	IC	1	
IC6101	W54543AFP	IC	1	
		CONNECTORS		
P2101	VJS2848D015	CONNECTOR	1	
P2102	VJS2848D017	CONNECTOR	1	
		RESISTORS		
R2101	ERJ8GCYJ563	M.RESISTOR CH 1/8W 56K	1	
R2102	ERJ6GWYJ222	M.RESISTOR CH 1/10W 2.2K	1	
R2106	ERJ6GWYJ473	M.RESISTOR CH 1/10W 47K	1	
R2108	ERJ8GCYJ272	M.RESISTOR CH 1/8W 2.7K	1	
R2109	FRJ6GWYJ472	M.RESISTOR CH 1/10W 4.7K	1	
R2110	ERJ8GCYJ563	M.RESISTOR CH 1/8W 56K	1	
R2111	ERJ6GWYJ222	M.RESISTOR CH 1/10W 2.2K	1	
R2112	ERJ8GCYJ561	M.RESISTOR CH 1/8W 560	1	
R2113	ERJ6GWYJ101	M.RESISTOR CH 1/10W 100	1	
R2114	ERJ6GWYJ471	M.RESISTOR CH 1/10W 470	1	
R2115	ERJ8GCYJ102	M.RESISTOR CH 1/8W 1K	1	
R2116	ERJ8GCYJ333	M.RESISTOR CH 1/8W 0.33	1	
R2117,18	ERJ6GWYJ102	M.RESISTOR CH 1/10W 1K	2	
R2119	ERJ8GCYJ333	M.RESISTOR CH 1/8W 0.33	1	
R6102	ERJ8GCYJ181	M.RESISTOR CH 1/8W 180	1	

Note: 1. * Be sure to make your orders of replacement parts according to this list.
2. **IMPORTANT SAFETY NOTICE**
Components identified with the mark (!) have the special characteristics for safety. When replacing any of these components, use only the same type.

[illegible]

Note: 1. * Be sure to make your orders of replacement parts according to this list.
2. **IMPORTANT SAFETY NOTICE**
Components identified with the mark (!) have the special characteristics for safety. When replacing any of these components, use only the same type.

[illegible]

4. VW-AS1E/B/A Electrical Replacement Parts List

Note: 1.* Be sure to make your orders of replacement parts according to this list.
 2.IMPORTANT SAFETY NOTICE
 Components identified with the mark <I> have the special characteristics for safety. When replacing any of these components, use only the same type.
 3.Unless otherwise specified,
 All resistors are in OHMS ,K=1,000 OHMS. All capacitors are in MICRO-FARADS(uf), P=uuF.
 4.The P.C.Board units marked with '■' show below the main assembled parts.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP60211A	SWITCH C.B.A.	1	(NLA)
	VEP61080B	MAIN C.B.A.	1	(NLA)
		INCLUDING THE PRIMARY CONTROL C.B.A.		(VEP60050C)
	VEP60050C	PRIMARY CONTROL C.B.A.	1	(NLA)
		INCLUDED IN MAIN C.B.A. (VEP61080B)		
	VEP60188A	CHARGE CONTROL C.B.A.	1	(NLA)
		INCLUDED IN MAIN C.B.A. (VEP61080B)		
	■ XBA2C16T80	FUSE 1.6A	<I>	
	VEP60211A	SWITCH C.B.A.		(NLA)
		CAPACITORS		
C26	ECFF1H1042F5	C.CAPACITOR 50V 0.1U	1	
		DIODES		
D15	PG2222SY	LED	1	
D16,17	BR2202S-20B1	DIODE	2	
D20	■ MA165	DIODE	1	
		IC		
IC2	UPC358C	IC	1	
		CONNECTORS		
P1	VJP2618	CONNECTOR	1	
P2	VJP1243T	CONNECTOR(MALE)	3P 1	
		RESISTORS		
R25	ERDS2TJ102	C.RESISTOR 1/4W 1K	1	
R27	ERDS2TJ122	C.RESISTOR 1/4W 1.2K	1	
R28	ERDS2TJ561	C.RESISTOR 1/4W 560	1	
R29	ERDS2TJ222	C.RESISTOR 1/4W 2.2K	1	
R41	ERDS2TJ332	C.RESISTOR 1/4W 3.3K	1	
R42	ERDS2TJ223	C.RESISTOR 1/4W 22K	1	
R44	ERDS2TJ223	C.RESISTOR 1/4W 22K	1	
R45	ERDS2TJ472	C.RESISTOR 1/4W 4.7K	1	
R46	ERDS2TJ103	C.RESISTOR 1/4W 10K	1	
SW2	EVQ0S804B	SWITCH	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP61080B	MAIN C.B.A.		(NLA)
		CAPACITORS		
C1	ECQ2A224M	P.CAPACITOR 100V 0.22U	1	
C2	VCK0046	.CAPACITOR	1	
C5	VCK0046	.CAPACITOR	1	
C6	ECOS2GA630BX	E.CAPACITOR 400V 68U	1	
C7	ECQE2104KF	P.CAPACITOR	1	
C9	ECEA1VGE330	E.CAPACITOR 35V 33U	1	
C10	ECEA1VFE101	E.CAPACITOR 35V 100U	1	
C11	ECKD2H101K3	C.CAPACITOR 500V 100P	1	
C12	ECKD2H151K3	C.CAPACITOR 500V 150P	1	
C13	ECA1EFQ102	E.CAPACITOR 25V 1000U	1	
C14	ECFF1H1042F5	C.CAPACITOR 50V 0.1U	1	
C15,16	ECEA1CK100	E.CAPACITOR 16V 10U	2	
C17	ECEA1EGE471	E.CAPACITOR 25V 470U	1	
C19	ECKF1H222MD	C.CAPACITOR 50V 2200P	1	
C20	ECEA1VFE270	E.CAPACITOR 35V 27U	1	
C21	ECEA1CK100	E.CAPACITOR 16V 10U	1	
C22	ECEA0UKS470	E.CAPACITOR 5.3V 47U	1	
C23	ECEA1CK100	E.CAPACITOR 16V 10U	1	
C25	ECFF1H1042F5	C.CAPACITOR 50V 0.1U	1	
C30	VCK0046	.CAPACITOR	1	
C31	VCK0044	.CAPACITOR V	1	
C33	VCK0044	.CAPACITOR V	1	
C101	ECUM1E1042FH	C.CAPACITOR CH 25V 0.1U	1	
C102	ECUM1H471KEN	C.CAPACITOR CH 50V 470P	1	
C103	ECUM1H222KEN	C.CAPACITOR CH 50V 2200P	1	
C104	ECST1EY474ZL	T.CAPACITOR 35V 0.47U	1	
C105,06	ECUM1H104KEN	C.CAPACITOR CH 50V 0.1U	2	
C201	ECUM1C154KEN	C.CAPACITOR CH 16V 0.15U	1	
C202	ECUM1H104KEN	C.CAPACITOR CH 50V 0.1U	1	
C203	ECUM1H102KEN	C.CAPACITOR CH 50V 1000P	1	
C204	ECUM1E2242FH	C.CAPACITOR CH 25V 0.22U	1	
C205	ECUM1E1042FH	C.CAPACITOR CH 25V 0.1U	1	
C206,07	ECUM1H270KEN	C.CAPACITOR CH 50V 27P	2	
		DIODES		
D1	S1WBA60S	DIODE	1	
D2	ERA22-08	DIODE	1	
D3	ERA32-004	DIODE	1	
D4	MA4270L	DIODE	1	
D5,D6	ERA22-04	DIODE	2	
D7	F5KF20	DIODE	1	
D8	MA4052L	DIODE	1	
D9	MA4091M	DIODE	1	
D10	MA165	DIODE	1	
D11	F5KF20	DIODE	1	
D12	MA165	DIODE	1	
D13	ERA22-04	DIODE	1	
D14	MA4091M	DIODE	1	
D18	MA165	DIODE	1	
D19	MA4039L	DIODE	1	
D21	MA165	DIODE	1	
D101	MA151K	DIODE	1	
D102	MA3051M	DIODE	1	
D201	MA151WA	DIODE	1	
D202	MA3051M	DIODE	1	
D203	MA151K	DIODE	1	
D205	MA3047-L	DIODE	1	
D206	MA151K	DIODE	1	
D207	MA3047M	DIODE	1	
DC1	VJJ0265		1	
		FUSES		

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
F1	XBA2C16TBO	FUSES 1.6A	1		R35-37	ERDS2TJ103	C.RESISTOR 1/4W 10K	3	
					R38	ERDS2TJ181	C.RESISTOR 1/4W 180	1	
					R40	ERDS2TJ102	C.RESISTOR 1/4W 1K	1	
		ICS			R101	ERJ6GMVJ823	M.RESISTOR CH 1/10W 82K	1	
IC1	UPC78L05J	IC	1		R102	ERJ6GMVJ391	M.RESISTOR CH 1/10W 390	1	
IC101	M51975FP	IC	1		R103	ERJ6GMVJ472	M.RESISTOR CH 1/10W 4.7K	1	
IC201	UPC324G2	IC	1		R104, 05	ERJ6GMVJ223	M.RESISTOR CH 1/10W 22K	2	
IC202	MM1551VMY	IC	1		R106	ERJ6GMVJ153	M.RESISTOR CH 1/10W 15K	1	
					R107	ERJ6GMVJ101	M.RESISTOR CH 1/10W 100	1	
					R108	ERJ6GMVJ151	M.RESISTOR CH 1/10W 150	1	
		COILS			R201	ERJ6GMVJ274	M.RESISTOR CH 1/10W 270K	1	
L2	VLFO898	COIL H	1		R202	ERJ6GMVJ563	M.RESISTOR CH 1/10W 56K	1	
L3	VLQ0292	COIL	1		R203	ERJ6GMVJ102	M.RESISTOR CH 1/10W 1K	1	
L4-L7	VLP0106	COIL H	4		R204	ERJ6GMVJ473	M.RESISTOR CH 1/10W 47K	1	
L8	VLQ0470	COIL H	1		R205	ERJ6GMVJ332	M.RESISTOR CH 1/10W 3.3K	1	
					R206	ERJ6GMVJ391	M.RESISTOR CH 1/10W 390	1	
		CONNECTORS			R207	ERJ6GMVJ473	M.RESISTOR CH 1/10W 47K	1	
P1	WJF1260	CONNECTOR (MALE)	1		R208	ERJ6GMVJ184	M.RESISTOR CH 1/10W 180K	1	
P01	WJS1237	CONNECTOR	1		R209	ERJ6GMVJ513	M.RESISTOR CH 1/10W 51K	1	
P101	WJR0392	CONNECTOR	1		R210	ERJ6GMVJ223	M.RESISTOR CH 1/10W 22K	1	
P103	WJRO246	CONNECTOR	1		R211	ERJ6GMVJ682	M.RESISTOR CH 1/10W 6.8K	1	
P201	WJRU391	CONNECTOR	1		R212-14	ERJ6GMVJ562	M.RESISTOR CH 1/10W 5.6K	3	
P202	WJRO592	PACK PIN	1		R215	ERJ6GMVJ224	M.RESISTOR CH 1/10W 220K	1	
					R216	ERJ6GMVJ103	M.RESISTOR CH 1/10W 10K	1	
					R217	ERJ6GMVJ682	M.RESISTOR CH 1/10W 6.8K	1	
					R218	ERJ6GMVJ122	M.RESISTOR CH 1/10W 1.2K	1	
PC01	PS25611.1-1-M	PHOTO COUPLER	1		R219	ERJ6GMVJ682	M.RESISTOR CH 1/10W 6.8K	1	
					R220	EXR6GD89LJ	.RESISTOR W	1	
		TRANSISTORS			R221	ERJ6GMVJ103	M.RESISTOR CH 1/10W 10K	1	
Q1	2SK1198	TRANSISTOR	1		R222	ERJ6GMVJ473	M.RESISTOR CH 1/10W 47K	1	
Q2	2SK705	TRANSISTOR	1		R223	ERJ6GMVJ823	M.RESISTOR CH 1/10W 82K	1	
Q4	2SD1583	TRANSISTOR	1		R224	ERJ6GMVJ106	M.RESISTOR CH 1/10W 10M	1	
Q5	2SD637	TRANSISTOR	1		R225	ERJ6GMVJ224	M.RESISTOR CH 1/10W 220K	1	
Q6	2SB641	TRANSISTOR	1		R226	ERJ6GMVJ273	M.RESISTOR CH 1/10W 27K	1	
Q7	2SK705	TRANSISTOR	1		R227	ERJ6GMVJ223	M.RESISTOR CH 1/10W 22K	1	
Q201,02	2SD601	TRANSISTOR CHIP	2 (Q,R,S)		R228	ERJ6GMVJ561	M.RESISTOR CH 1/10W 560	1	
Q203	2SB709A	TRANSISTOR CHIP	1		R229,30	ERJ6GMVJ102	M.RESISTOR CH 1/10W 1K	2	
Q204,05	2SD601	TRANSISTOR CHIP	2 (Q,R,S)		R231	ERJ6GMVJ561	M.RESISTOR CH 1/10W 560	1	
					R232,33	ERJ6GMVJ103	M.RESISTOR CH 1/10W 10K	2	
					R234	ERJ6GMVJ102	M.RESISTOR CH 1/10W 1K	1	
QR201	UN2214	TRANSISTOR-RESISTOR	1		R235	ERJ6GMVJ392	M.RESISTOR CH 1/10W 3.9K	1	
QR202	UN2213	TRANSISTOR-RESISTOR	1		R236	ERJ6GMVJ332	M.RESISTOR CH 1/10W 3.3K	1	
QR203	UN2122	TRANSISTOR-RESISTOR	1		R237,38	ERJ6GMVJ103	M.RESISTOR CH 1/10W 10K	2	
QR204,05	UN2214	TRANSISTOR-RESISTOR	2						
					T01	VLTO607	TRANSFORMER	1	
		RESISTORS			X01	V5X0094	CRYSTAL OSCILLATOR	1	
R1	ERC12GK334	S.RESISTOR 1/2W 330K	1						
R2-R5	ERDS2TJ823	C.RESISTOR 1/4W 82K	4						
R6	ERC3SJ583	M.RESISTOR 3W 68K	1						
R8	ERX1SJ82	M.RESISTOR 1W 0.82	1		ZNR1	ENB461D-05A	SURGE ABSORBER 460V	1	
R9	ERDS2TJ221	C.RESISTOR 1/4W 220	1						
R10	ERDS2TJ470	C.RESISTOR 1/4W 47	1				MISCELLANEOUS		
R11	ERDS2TJ333	C.RESISTOR 1/4W 33K	1						
R12	ERDS2TJ183	C.RESISTOR 1/4W 18K	1						
R13	ERDS2TJ220	C.RESISTOR 1/4W 22	1						
R14	ERDS2TJ331	C.RESISTOR 1/4W 330	1						
R15	FRDS2CKG6802	M.RESISTOR 1/4W 68K	1						
R16	ERDS2TJ100	C.RESISTOR 1/4W 10	1						
R17	ERDS2TJ181	C.RESISTOR 1/4W 180	1						
R18	ERDS2TJ821	C.RESISTOR 1/4W 820	1						
R19	ERG1SJ121	M.RESISTOR 1W 120	1						
R20	ERDS2TJ332	C.RESISTOR 1/4W 3.3K	1						
R22	ERF2AKR10	M.RESISTOR 2W 0.1	1						
R23	ERD2FC0470	C.RESISTOR 2W 47	1						
R24	ERDS2TJ332	C.RESISTOR 1/4W 3.3K	1						
R25	ERDS1TJ681	C.RESISTOR 1/2W 680	1						
R30	ERF7AJ100F	.RESISTOR W	1						
R31	ERF5AJ100F	.RESISTOR W	1						
R33	ERDS1TJ681	C.RESISTOR 1/2W 680	1						
R34	ERDS2TJ102	C.RESISTOR 1/4W 1K	1						

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